

# **Global formats and local enactments: a case study of ICT professionals working on e-government projects in Dubai**

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*This thesis is dedicated to my family*

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## **Acronyms**

**ANT:** Actor Network Theory

**DeG:** Dubai e-Government (central agency)

**E-S-R Model:** Enactment-Selection-Retention Model

**GCC:** Gulf Cooperation Council

**GIRP:** Government Information Resource Planning Department

**ICT:** Information and Communication Technology

**KPI:** Key Performance Indicator

**NPM:** New Public Management

**POGAR:** Programme on Governance in the Arab Region

**TEF:** Technology Enactment Framework

**UAE:** United Arab Emirates



## **Abstract**

This research investigates the implementation of e-government systems in Dubai, as seen through and shaped by the lived experiences of ICT professionals who work in the public sector. The research employs a conceptual lens based on Fountain's technology enactment framework for e-government. This is used to capture the discursive relationship between institutional arrangements within the UAE's public sector and enacted technology. Concepts of sensemaking and enactment are used to explore the local perceptions and actions of ICT professionals drawing on both new and existing institutional resources.

The research draws on the case study of one of the largest public sector organizations in Dubai that was engaged with the implementation of e-government projects in the period of 1999-2007. The research explores the lived experiences of ICT professionals working on the planning, development and management of e-government systems and their responses to events over the course of the project. The research focuses on key events during three definitive time periods: The beginning of the e-government project; progress in the implementation of the project and finally the closure of the project and starting the new. The implementation of the e-government project is informed by these lived experiences that occur within and relate to wider institutional dynamics. Namely, the dynamics as new public management and e-government encounter local traditions of bureaucracy and socio-cultural norms of the UAE's public sector.

The research shows how micro level interactions are part of an on-going process of appropriating the newly arrived formats for e-government. The main argument in this thesis is that the ICT staff's actions respond to dynamics between new and existing institutions and this substantially contributes to the emergence and shaping of locally meaningful ICT innovations in Dubai's public sector. The research adds to the limited body of exploratory studies of e-government implementation that are based on a social constructivist view. The research further extends the discourse on globalization and ICTs by discussing how the influences of disembedded global institutions take form within local contexts and shape e-government projects.

# Chapter 1: Introduction

## 1.1 Research Area, Motivation and Aims

The media often report stories of innovative e-government projects that are changing the landscape of public administration across the world: to implement congestion charges in London, to increase participation in voting in Chile, to pay taxes in tele-centers in rural India or to renew driving licenses in Jordan. It is not surprising that people have been intrigued by the potential of technology to change the public sector since at least the 1950's. The past two decades has seen a rapid pace of innovation with a very significant investment made in public sector ICT in both the developed and developing world. It is now unimaginable in many parts of the world to ever move back to paper-based systems within a traditional bureaucratic public sector; rather the changes in how the public sector operates have become in many respects irreversible. However, to achieve this degree of change these new public sector information systems have had to be incorporated into new state policies and have had to enrol people, both citizens and public sector staff, as well as managerial and financial resources to make them work.

This thesis is concerned with this latter aspect, in particular how public sector workers, who take responsibility for building such systems and implementing new policies, experience and understand these changes. The research approaches this by considering how these e-government initiatives, which are inspired and informed by global actors, are perceived and experienced by local actors working on the e-government projects. This research then explores the implications of these locally formed meanings and responses. The aim is to expose the process of e-government system emergence by highlighting how this involves the ICT professionals' actions (habitual, cognitive and emotional) as they draw upon experiences and understandings to respond to unfolding events during the project. This analysis is supported by a case study from Dubai's e-

government initiative, which established objectives of transforming the public sector through ICTs and enhancing levels of convenience in obtaining public services. The study is set in one of Dubai's largest public sector organizations, Dubai Municipality (DM), and the ICT professionals who are members of the organization and work on the technology elements of the new system as part of their daily tasks.

Studies of e-government have predominately adopted a functional perspective to the design and development of information systems, concerned with what they do - outputs and interactions. There are also a considerable number of studies that adopt an overt managerial perspective to provide normative suggestions and models to guide implementation and management of e-government systems. In recent years, studies of e-government systems have viewed information systems as socially embedded. This style of research has been undertaken in an attempt to understand the process of adoption, development and use of technologies and outcomes.

In the field of information systems the social embeddedness of information systems has been explored in different ways. One approach focuses on the role of social structures in influencing the adoption and use of information systems, privileging the social context as the influencer of action. Another approach emphasizes the role of local situated actions and routines as shaping technology development and use. Some have attempted to bridge these competing views, often by employing social theories such as Structuration Theory or Actor Network Theory that acknowledge the relationship between actions and social structures (W. J. Orlikowski 1992; Rose & Jones 2005). This has been part of a wider debate on the relationship between technology and human practices; on whether it is the technology that shapes people and practices or vice versa. For example, work on Structuration theory by Orlikowski (1992; 2001) and Barley (1986) present technology as encompassing or inscribed with social structure, where technology mediates roles and practices. Thus, technology and social structures are both shaped in technology use.

The relationship between technology and people is conceptualized by Rose and Jones (2005) in another way, the authors present two forms of agency – the capacity to influence - in both the artefact and the actors. The interaction between these two forms of agency, they argue, is what shapes outcomes. The authors suggest that a double dance of agency takes places within certain influential conditions and properties of human agency. These conditions are the social structures, personal histories and situational network that actors are embedded in. The properties of human agency include intentionality and self and social awareness.

The conditions of the situational network of actors and their personal histories leads us to consider the process in which actors perceive situations they encounter while working with technology, which involves drawing on existing understandings and experiences. This links with Orlikowski and Gash's (1992) work on the role of technological frames of different groups in the organization as shaping the implementation and use of technologies. Such a perspective is similar to Pattriotta and Lanzara's (2007) study of an automobile factory and how agency inscribes knowledge into artefacts (a template) that guides enactments. The institutionalization of knowledge is presented in their work as a recursive process of writing, enactment and reproduction of the template and code. They also show how it was vulnerable to breakdown during a strike.

This research focuses on e-government systems implementation projects. There have been many books and articles on the theme of information systems and public administration reform over the past decades (Margetts 1991; Heeks 1999; Fountain 2001; Dunleavy et al. 2006). In many interpretive studies, the persons who are at the centre of the question here are pushed to the background, as societal, technical, economic and political institutions take the foreground in explanations of the implementation and use of information systems in the public sector. This research aims to be a little different, and to shed light on how these social, technical, economic and political institutions create an environment of events and shape expectations, perceptions and aspirations (and

responses) of the people at the centre of e-government projects. The focus is on the public sector ICT professionals, and how (and to what extent) these broader institutions are articulated in their actions and practices.

In a similar spirit, the research presented here uncovers the role of human agency in the process of e-government development and in shaping the meanings and modes of organizing of the actors themselves. In this way, we present the actions and practices of these people as reflecting (and being informed by) local and global disembedded institutional influences. The research thus reflects on the role of the 'global' by introducing the notion of e-government *formats* (akin to Pattriotta and Lanzara's templates) which are semi-configured packages of technology, organizing practices and norms, that arrive in the context of government organizations and are locally worked out with the existing sediments of ideas and practices.

The motivation for this research is found in the feeling that academic studies have paid relatively low attention to the theme of local enactments of large-scale ICT projects in the public sector. However, from the outset of this endeavour there was always the question of 'who are the *person(s)* at the centre of the process of planning, developing and managing these information systems and what is the relationship that exists between them and how the process unfolds over time?' This led to focus on what these actors do and how they organize themselves and act to allow e-government systems to arise. In particular, e-government projects are often based upon models, guidelines and best practices that arrive from elsewhere, from international organizations and consultancy companies and from iconic, usually developed countries' experiences (think of Canada, Sweden or Singapore). This work is set in the context of a country in the Gulf region, the region the researcher comes from, and thus another motivational factor was to understand how these global ideas of e-government arrived and developed in that context.

## 1.2 Research Questions

This research sets to answer the following theoretically informed research question:

*How do the ICT professionals enact e-government systems and what are the implications of this enactment process on the e-government project and on the professionals themselves?*

Seeking to understand how e-government systems are locally enacted involves exploring the origins of the e-government initiatives to identify various actors' involvement and there framing of meanings. With this backdrop, the research explores how these meanings that are linked to e-government initiatives in abstract formats are perceived, experienced and appropriated. This is done by focusing on the ways in which local actors encounter and respond to a series of significant events that take place over the course of the project studied. This leads us to the first sub-question:

*Where do the meanings of e-government come from and how are they experienced and translated by the local ICT professionals?*

The research aims to understand what shapes local responses which contribute to technology enactments. The research aims to reveal the institutional dynamics that play a role in informing actions. The thesis discusses institutional structures prevalent in Arab Gulf States - the local. In addition, the thesis takes into account the influence of global disembedded institutions in informing these actions - the global. This brings us to the second sub-question:

*To what extent are these enactments shaped by events and/or by both local and disembedded (international/global) institutional structures?*

The research concludes by investigating the implication of these local enactments that constitute organizing processes. We have become accustomed to judge the success and failure of implementation in terms of stated aims in strategies. In contrast, this research sets to understand the underlying (and at times inconspicuous) processes of change that take place within the project and, to the people working on it, seen in terms of the set-up of the technical system, modes of organizing and ways of thinking. The research thus concludes with the following sub-question:

*What are the implications of the technology enactments on the project's outcomes and the ICT professionals?*

### 1.3 Research Paradigm and Theoretical Concepts

The objective of accessing the worldviews and actions of the ICT professionals in Dubai, who are at the centre of this study, coincides with the interpretivist perspective adopted here as an epistemological position. The core assumption of the interpretivist perspective is to emphasize culturally derived and historically situated interpretations of the social life world (Crotty 1998, p.66). This guides the approach of the researcher and the research strategy and design employed here, as well as the analysis. As noted earlier on, this research sets to discover local processes of enactments and on-going appropriation and change processes. This requires a flexible research approach that gives room for unexpected findings and allows shifts in the understandings of the researcher as she experiences the field and iterates between theory and field data.

The conceptual framework employed here is the *Technology Enactment Framework*, referred to as TEF (Fountain 2001). The two constructs that are part of the TEF, enacted technology and institutional arrangements are elaborated upon. The TEF is extended with the theoretical concept of formats (Sassen 2006a; Sassen 2006c). Jane Fountain's TEF has been one of the most influential frameworks in the study of ICTs in the public sector over the past decade. The TEF's strength lies in its synthesis of a number of integral theories on the public sector and ICTs in organizations, and by which it depicts the landscape where most e-government projects are set up and used. The prominence of this framework for the past decade can be explained by its holistic approach to explaining how information systems in the public sector are enacted. The TEF focuses on particular actors and the institutional arrangements that they are suspended within, as well as offering a role for technology itself. Fountain's (2001) framework presents researchers with a lens to analyse the relationship between the actions of public sector workers, who develop and work with technology, and the institutional structures they are embedded within.



The thesis employs the TEF and elaborates on two of its main constructs. The elaboration is to address the basic premise of enquiry in this research, which is the role of agency in the development and management of e-government systems. The concept of technology enactment, a key construct in the TEF, is not sufficient to explore the processes by which people make sense of new ideas and to identify what guides actions and how meanings are modified. This research thus requires an approach that supports a more sophisticated account of how people at the centre of e-government projects work, and how and why their actions take form in a particular way. For this purpose, Karl Weick's (1979; 1995) concepts of *sensemaking*, *enactment* and *organizing* are used to elaborate on the construct of enacted technology in the TEF. These ideas are not new to the framework, since they are the basis of the concept of enacted technology and are presented briefly as constituent concepts in Fountain's (2001) work. Using this approach, the ICT professionals' enactments, what they individually and collectively do, are understood as responses to uncertainty due to events that take place. Their actions are also seen as responses to local and global institutional forces at play.

The TEF's construct of institutional arrangements has been elaborated upon as well, through ideas from Richard Scott's (2001) work on what constitutes institutions (pillars) and how they travel (carriers). This is used to account for change agents that arrive and introduce global packages of technology, norms and modes of organizing, or what Sassen (2006a) refers to as *formats*. Ideas of institutional pillars, carriers and formats are of particular relevance and significance in the context of developing countries, which as history has shown us have been (and still are) subject to strong global influences and interventions. Any account of locally situated patterns of actions and meanings of e-government systems in developing countries would be incomplete without taking into account the influx of global influences and agents, which constitute these global formats. How enactments unfold and their implications are exposed through elaborating on both the local micro-level processes of action and meaning formation, and the structures they are embedded within that incorporate global influences.

## **1.4 Introducing the Case Study**

This research is built around a case study of an e-government project in Dubai, one of the seven states in the UAE federation, a country in the Gulf region. The case study is set in the distinctive context of Dubai. Dubai is part of a region that has experienced substantial institutional changes over the past four decades, yet retains many of its historically established socio-cultural norms and belief systems. Dubai aims to become a global city and has engaged in numerous initiatives for infrastructural and socioeconomic development. Many of these development projects have focused on the role of ICTs in many sectors of society; one of the most prominent is the e-government initiative. The primary national e-government initiative in Dubai was set up in 1999, and announced officially in 2000.

The initiative, since then, has gained significant attention in the local and regional media over the past decade, given that it is one of the earliest and largest of its kind in the Middle East region. The main objective of the initiative was the modernization of service delivery to create convenience for members of the public, which includes citizens, residents and businesses. This was to position Dubai as an economic hub in the region and a global business centre. One of the more specific aims was to achieve 70% (which was later modified to 90%) of all government services over the Internet within a short time frame of less than two years.

The study here focuses on Dubai Municipality (DM) one of the largest public sector organizations in the state. DM initiated its e-government projects as part of the national initiative for e-government to develop a state of the art e-government infrastructure and web portal. The case study shows that the expertise and experience of international consultants was drawn on at two levels, for the development of the national initiative for the public sector and for the planning and implementation within organizations. DM

managed to deliver substantial systems with work continuation for almost a decade, meeting state objectives and even surpassing them.

There are three reasons that make the study of e-government in Dubai a significant empirical contribution. First, there are few studies of e-government project implementation in the Middle East region, and what is available on e-government presents a very fragmented picture. Second, the context of the Gulf region, which is comprised of six countries, offers the opportunity to gain insight into the implementation of ICTs in the public sector in a region with a distinct and deeply entrenched set of socio-cultural institutions that set it apart from other regions of the world. The countries of the Gulf have also been subject to significant social, political and economic developments since the 1970's as they become enrolled into global political, economic and financial institutions. It is argued here, that these global institutions have a significant role in how e-government projects are played out. Finally, Dubai in particular offers the chance to explore these issues in the context of a state that is attempting to transcend the local and become a global city.

## **1.5 A Summary of the Thesis's Structure**

The thesis is comprised of eight chapters. This chapter introduced the research project's main themes, aims and motivations. The chapter then proceeded to present the research questions, theoretical and empirical. Then key theoretical concepts were introduced and discussed. Finally, an overview of the case study was presented.

The second chapter is a literature review of journal articles, books and publications on the intersecting themes that serve as the foundations for this research: e-government and information systems implementation. The literature review is based on work on both developed and developing countries, with some references on the Middle East region. The first section presents three conceptualizations of e-government: an extension to a history of ICT use in the public sector, e-government as strategic change, and e-government in the Middle East: practices and cultural persistence. The remainder of the chapter reviews different perspectives of the implementation of e-government systems to show contrasts between organizational, macro level and agency level perspectives.

The third chapter is dedicated to a discussion of the theoretical perspective taken in this work. The chapter presents Fountain's Technology Enactment Framework (TEF) as a broad conceptual framework to guide the analysis of information systems in the public sector. The framework acknowledges the relationship between technology, actions of people, and institutional arrangements. Two constructs of the framework are elaborated on: enacted technology and institutional arrangements. The TEF opens up the concept of enacted technology through Weick's (1979; 1995) concepts of sensemaking, enactment and organizing, which are constituent theories of the TEF, in order to explore micro-level processes in the public sector as e-government is developed and used. The construct of institutional arrangements in the TEF is detailed using concepts from Scott's (2001) work on institutions and how they travel. The TEF is extended through introducing

Sassen's (2006a; 2006c) notion of global formats. The concept of global formats is introduced to explore the role of global institutional influences on the project.

The fourth chapter presents the methodology employed in this research. The methodology is presented using two approaches. The chapter begins with a descriptive overview of the epistemological position of interpretivism and social constructionism. Once the epistemological position is articulated, the chapter moves to a confessional style in presenting the fieldwork experience, from data collection to analysis techniques, and presents some reflections on the issues experienced by the researcher.

The fifth chapter presents the empirical data in two main sections and a conclusion. The first section of the chapter presents a background to the United Arab Emirates in general and the state of Dubai. The section presents an overview of the history the UAE that focuses on political structures, the nature of the public sector in the UAE and public administrative reform projects. The chapter then presents an overview of Dubai's e-government initiative, in terms of objectives, institutional structures and strategies. A discussion of developments in the socio-political context and its links to the international community is presented. The second section of the chapter presents a historical narrative on the implementation of the e-government systems. This includes an overview of the organizational strategy, changes to the IT department's structure, three phases of implementation and a summary of reported outcomes.

The sixth chapter presents the analysis of empirical data and is divided into two main parts. First, the chapter presents a chronological account of how the ICT professionals responded to key events over the course of the project. The section shows shifting patterns of actions over time that relate to individual aspirations and a need to retain a sense of autonomy. This is described as part of a sensemaking and organizing process where these actors draw on situational scripts as they encounter events. The second part of the chapter explores how the sensemaking and actions of the ICT professionals is

conditioned by broader institutional arrangements. The section explores how the ICT professionals make sense of the management consultants' concepts. Institutions of new public management and e-government and Dubai's development model inform their actions. The section then shows conflicts that new institutional influences and the e-government format generate in the bureaucratic context and how these conflicts were resolved. This involved drawing upon the historical role of public bureaucracies in development and socio-cultural norms in Dubai. Finally, the chapter concludes with a summary of key findings of the analysis.

The seventh chapter is a discussion of central themes that emerged from the analysis and relate to the field of e-government. The chapter is comprised of four sections and a conclusion. The chapter begins by discussing how e-government outcomes of success are identified *ex ante* and *ex post* based on standard managerial models. The chapter then discusses how outcomes for e-government projects are explained by comparing various theoretical frameworks. The chapter then moves to discuss the theme of ICT innovations in the public sector, organizational change and institutional dynamics. The chapter finally discusses the synthesis of theoretical concepts employed in the analysis and discussion so far. The chapter concludes with a summary of themes discussed

The eighth chapter presents the conclusion to the thesis. The chapter begins with a restatement of initial aims and an overview of key ideas derived from the research. The chapter then presents a reflective summary of each chapter and the lessons learned. The chapter then moves to discuss the empirical and practical contributions of this research and includes recommendations on how to perceive and frame the implementation of e-government projects, local processes of change and the emergence and shaping of ICT innovations. This is followed by a discussion of theoretical contributions particularly in terms of how the TEF is modified and contributes to our understanding of institutional change in the context of public sector organizations. The chapter concludes with the limitations of this study and ideas for future research.

## **Chapter 2: Literature Review**

This research is concerned with exploring the role of human agency in the implementation of globally inspired and guided e-government projects. The literature reviewed here is drawn from two central domains: e-government and information systems implementation. The first part of this chapter presents different conceptualizations of e-government in the literature. This covers the three themes: continuation with past initiatives, strategic change, and e-government in the Middle East: cultural practices and persistence. The section begins with an overview of historical case studies of ICT projects in the public sector and more recent studies that incorporate historical elements. The section then moves to present e-government studies that focus on the potential of ICTs in transforming the public sector and these often draw upon standard managerial models that offers guidance to achieve these objectives of change. Finally, the section presents an institutional conceptualization of e-government with examples of studies from the Middle East region.

The second part of this chapter presents a review of the literature on the implementation of e-government systems and is categorized according to three levels of analysis and perspectives. The three sections are: managerial perspectives and organizational level analysis, macro level analysis, and agency-centred perspectives. The third section is on agency-centred perspectives presents studies that focus on the role of public servants' perceptions, actions and overall engagement in the development and use of e-government systems, which is the focus of this research study.

## **Conceptualizations of E-government**

Information and communication technologies have been heralded as tools that improve and change public administration in both developed and developing countries. The discourse on the potential of ICTs in changing and even transforming the public sector has been longstanding (Bozeman & Bretschneider 1986; Pitt et al. 1984). Since as early as the 1960's there have been studies on the potential effects of ICTs on public administration, such as improved performance and decision-making through access to information, and the humanizing effect that ICTs brings to bureaucracy as computers take over routine tasks of staff (Simon 1973; Kraemer & King 1986) and public managers are able to delegate information processing tasks to staff (Kraemer et al. 1993). Similarly, ICTS have been promoted in developing countries as a means to enhance and reform the planning and administrative activities of the public sector (Madon 2009).

There are many case studies of early ICT projects in the public sector that present examples of the positive impacts of ICTs in terms of benefits to clients such as improvements in the delivery of health and social security organizations and time reduction (Ingelstam & Palmlund 1991; Clarke & Stevens 1995). The academic discourse on the positive impacts of ICTs in public administration is illustrated in Danziger and Anderson's (2002) work. The authors present a review of journal articles on the topic of ICT impact patterns in the public sector from the period of 1987-2000. They explain the position of the paper and state '...we accept research findings where a certain affect can be attributed to ICT, even when there are interactive processes between the technology and the actors and when the causal relationship cannot be demonstrated with precision.' (2002, p. 595). The majority of papers reviewed show evidence that ICTs have a positive impact on the capabilities, efficiency and productivity gains of public administration. There are in the past decade, however, a few exceptions of studies that move beyond impact studies and take into account the social, organizational and political aspects that shape the processes of developing and using these systems (Fountain 2001;



Cordella 2007; Contini & Lanzara 2008; Madon 2009). Such an interpretivist approach is adopted in this thesis and elaborated on in section 2.3.

The different ways of conceptualizing e-government is discussed by Cordoba-Pachon and Orr (2009) in a study of Columbia, who identify three patterns of thinking about e-government that include the idealist, strategic and power-based view. The authors argue that these patterns of thinking enable us to critically analyze the taken for granted idealist view. Moreover, by adopting these perspectives we can assess strengths and weaknesses in ways of thinking and how context plays a role in e-government policy formulation, implementation and use. Similarly, the conceptualizations presented here also present different ways of thinking about e-government in the literature. These conceptualizations also interact and come to shape how these projects are planned and developed and used.

E-government, a term used since the 1990's, refers to a range of activities, from employing web-based technologies to offer public services over the Internet, to shifting modes of governance. The term e-government and e-governance have often been used interchangeably. Some have distinguished between the two terms, where e-government refers to the electronic provision of services, and e-governance refers to a wider range of electronically mediated activities such as policy formulation and civic communication (Marche & McNiven 2003). The main objectives of e-government initiatives include improvements in efficiency and administrative functions (Anderson 1999; Chadwick & May 2003) better management, transparency and accountability (Ranerup 1999; Dunleavy *et al.* 2006; Gupta *et al.* 2008) and improvements in service delivery processes (Bekkers & Zouridis 1999). For the purposes of this research, e-government refers to the use of ICTs for strategic and political change, service delivery and administrative reform in public administrations. The case study of Dubai focuses on the latter point. The literature presented in this chapter draws upon studies of e-government from different contexts and covers both developed and developing countries, where the latter includes studies on ICT projects in the Middle East region.

## **2.1 E-government as a Continuation with the Past**

Although e-government has a past with ICT projects documented since the 1950s, most e-government studies do not have a strong historical contextualization, with notable exceptions (Bellamy & Taylor 1998; Heeks 1999; Walsham & Sahay 1999; Fountain 2001; Avgerou 2002; Al-Jaghoub & Westrup 2003; Dunleavy et al. 2006; Madon 2009; Cordella & Iannacci 2010). We begin by presenting a historical account of ICT projects in the UK's public sector from the 1970's to the early 1990's. The section then moves to present an overview of historical ICT projects in developing countries and the Middle East region in particular. It is important to consider the early experiences of both developed and developing countries, particularly in the case study of Dubai where elements of both are reflected.

One of the earliest and best-documented examples of information technology use in the public sector is the introduction of batch computers to the UK Department of Social Security in 1959, and subsequent generations of computer-based systems (Margetts 1991; Collingridge & Margetts 1994; Willcocks 1994). The new information system was designed to fit within the existing organizational structure and included both manual and automated processes. The updating by a batch of computer-based files was through data that was sent in the form of paper documents from local offices. During the next two decades, the increase in workload and difficulties associated with the absence of an electronic link between the local and central offices resulted in a decision to restructure the information system in 1980.

The objectives that were set in the 1980's by the DSS for the new information system were very similar to other projects at the time such as a NHS initiative for an information communication infrastructure. In the DSS case, objectives included improving levels of efficiency, with a focus on the 'whole person' approach, so that data repositories could be integrated to reduce contact points for clients and minimize delays in receiving

social benefits. Other objectives included effectiveness, higher quality of data and job satisfaction as routine tasks were automated by the new system. In the late 1980's the NHS had similar objectives outlined in the NHS review which materialized into an Information Management and IT (IMT) strategy in 1992, where the aims included integration of data to facilitate data sharing and enabling a 'person system' to be set up (Keen 1994).

These large-scale and ambitious ICT projects in the public sector were found to have mixed performances. Revisiting the studies of public sector ICT projects in the UK shows the drift of the information systems from initial objectives and plans. For instance, Margetts (1991) explains how the DSS information system costs were much higher than initially proposed in the operational strategy. Another outcome was a shift in staff satisfaction, which was high at first, however in the long term decreased as reductions and relocations of staff took place and as jobs shifted to more inputting of information than working with clients. Also, the "whole person approach" was never truly achieved. Clients rather accessed information about specific benefits and then the processing took place in separate units that were not designed to work together. Other problems revealed were the lack of adequate user requirements in the system design. For example, the manual process included a space to include "further details" while the computer system did not.

We find a similar set of results in a case study of the NHS (Keen 1994) that examines the implementation of the information infrastructure for collaborative work in the 1990's. The NHS information system that was implemented across departments and extended across regions of the UK was described by Keen (1994) as marginal to collaborative work. There was a lack of integration across departmental and management systems and there was a high number of freestanding information systems in departments. Moreover, the project to connect to regional centres was too costly. As a result, there was a move to set up a new infrastructure to make ad-hoc linking, where the local sites would make

decisions about which other sites to connect to. Another obstacle was the coding system, which proved to be expensive and difficult to implement, given that healthcare is a messy social activity. Indeed, the question of coding is still a live issue in the NHS 20 years later.

Such studies of large scale ICT projects in the public sector 20 years ago, shed some light on the nature of the implementation process and how it is contingent upon the developments that take place in the socio-political context. The study by Margetts (1991) of the information systems in DSS illustrates several aspects of the socio-political context that contributes to the shaping of the process of implementation and performance of the system. For example, shifts in policies for social benefits delayed the planning process and involved dropping some of the smaller system improvement projects underway. The unions were also part of the political environment and the risk of strikes was also inscribed into the system so that work could be switched between centres. Moreover, personnel policies that specified a smaller role for internal staff in the design process, the introduction of contractors' IT staff and relocations and reductions of internal staff affected morale of staff and generated resistance towards the new strategy (Margetts 1991).

Institutionalized practices and norms in the public sector were also significant aspects of the context that shaped the outcomes of these projects. Internal employees in public sector projects were not accustomed to having to play a marginal role in these projects and support the contractors. Another factor was that the ministers and senior managers' focus was on work other than IT. This isolated policy from administration and represented a lack of commitment to the role of IT in change. The institution of management and IT consultancies was also another factor, as expertise was not, as expected, transferred into the public sector to ensure long-term commitment, but rather transferred out. The contractors were from a different environment and were not enrolled

into the political environment of DSS, which is how Margetts (1991) explained the gap between the two groups.

We find a myriad set of socio-political aspects that have shaped the NHS projects in the past (Keen 1994). Policies shaped the information strategy that focused on attaining bureaucratic objectives and the use of the information system and data for managerial purposes more than using them to support clinical activities. Issues of funding the setup of linkages amongst regions and departments delayed and changed the plans for integration. The clinical and management directorates' systems were not integrated, and this made it difficult to implement the "whole person" approach. As Keen (1994) sees it, the NHS was already facing a paradox of fragmentation that was reinforced with the new systems and the call for collaboration in work. The implementation of the system was affected by the institutionalized practices within individual departments or hospitals such as unique language and data used, as well as issues of information ownership and not collaborating with private sector contractors. Another issue was that the supplier introduced a software system that was based on the US model of healthcare did not fit in well with the institutionalized practices of the NHS.

In the context of developing countries, there is also a historical context to the development and use of ICTs, which has been an objective since the 1970s and 1980's to improve planning and administrative functions of the public sector (Madon 1993; Walsham & Sahay 1999). The Middle East region presents similar issues and patterns in the implementation of ICT projects. Studies reveal that during the same period, several public sector ICT projects were emerging to computerize public administration functions in countries such as Saudi Arabia and Kuwait, Jordan, Tunisia, Iraq and Egypt (Ibrahim 1985; Atiyyah 1988; Schware & Choudhury 1988; Atiyyah 1989; At-Twaijri 1989; Jreisat 1990; Abdul-Gader et al. 1994; Abdul-Gader & Kozar 1995) and to provide technical assistance to public and private organizations (Kulchitsky 2004). There were also advanced projects in Egypt that were elaborate and large in scale in the fields of

decision support systems to assist in policy formulation (El Sherif & El Sawy 1988; Nidumolu et al. 1996; Kamel 1998).

The current national initiative for e-government in Jordan and the Reach initiative that aims to develop the country's software and IT industry so that it becomes more competitive. This was to be achieved through the cooperation between the public and private sector, and there have been initiatives since the 1990's. Previous initiatives include the National Information Centre (NIC) to assist in decision support and policy making, as well as previous initiatives to modernize public sector administration (Jreisat 1990; Kulchitsky 2004).

There have been a small number of studies that have explored the computerization of public sector organizations in the GCC region. These studies focus on computer usage and effectiveness in case studies of Kuwait and Saudi Arabia (Ibrahim 1985; Atiyyah 1988; Atiyyah 1989). Many cultural and organizational issues have been discussed such as the lack of expertise or knowledge of computer needs, and heavy marketing by IT service providers. There were also reports of high turnover of local IT staff to work in the private sector. One of the issues discussed was the nationalization of the workforce policy, which aimed to encourage Saudi nationals to take up jobs in the public sector, which meant that clerical jobs could not be jeopardized with computers. Another problem was the lack of user involvement in the development process (Ibrahim 1985; Atiyyah 1988). Even though adoption is high; the studies reported a lack of effectiveness. Another example is Tunisia where a study by Schware and Choudhury (1988) shows that the computerization of the public sector was difficult given the inadequacy of information processing procedures and infrastructure that created problems in subsequent computer usage.

There were also cultural aspects that played a role in how the implementation of these projects in the Middle East unfolded. For example, there was a symbolic value for

computers that affect high adoption, which is considered to represent progressive attitudes and even as portraying the organization and local administration as modern in the eyes of others political actors and citizens (Nidumolu et al. 1996).

### ***E-government and New Public Management***

Several of the studies of ICTs and public administration discussed so far, particularly those in Western contexts, have emphasized the role of New Public Management ideas. New Public Management is often associated with the ideas of Margrett Thatcher in the UK, as an important aspect of the socio-political context that promoted the development and use of these information systems. At this point, the discussion turns to elaborate on the concept of new public management and how it links to the context of developing countries, particularly in the Middle East.

New public management, abbreviated as NPM, emerged as a set of principles or administrative doctrines in the late 1970's (Hood 1991; Barzelay 2001) during a period of time when there were problems in the economy and often negative views of old public management. Several institutional actors in the UK moved to develop public sector policies to resolve this. The US was also a strong promoter of these ideas during the 1990's in the reinvention movement, where the notion of "the customer" was replacing "the clients". E-government is often portrayed as a continuation to new public management (Bellamy & Taylor 1998; Heeks 1999). For example, Barzelay and Shvets' (2006) study of the implementation of management information systems in Brazil illustrates how ICT's were employed to support the NPM-like management initiatives undertaken by the government.

NPM is a conceptual device to guide scholarly discussions of contemporary changes in the public sector (Barzelay 2001). There are certain aspects that are generally accepted to constitute NPM and these include: a shift to focus on outputs and outcomes measurement activities and values of efficiency (Hood 1995; Bouckaert & Peters 2002; Pollitt &

Bouckaert 2003). The concept also involves a move towards contract-like relationships, a flatter organizational form and the adoption of market-like mechanisms to deliver public services (Common 1998; R. Denhardt & J. Denhardt 2000; Manning 2001; Diefenbach 2009). Hood (1991) identifies key ideas that constitute NPM and they include: managers free to manage ethos, employment of standards and measures, an emphasis on control, decentralizing to corporatized units, competition, using managerial approaches from the private sector and stronger control over resource use.

The international prevalence of new public management has been discussed in many studies (Polidano 1999; Polidano & Hulme 1999). These studies also explain the role of institutional carriers such as academics, politicians, international consultants and public sector staff with management or new public management degrees in promoting these ideas in the public sector. Other factors identified as contributing to the spread of these ideas are the role of supranational organizations, such as the OECD, which set up the public management service PUMA<sup>1</sup>. This represented an institutional force that promoted these ideas to member countries.

In the context of developing countries, the IMF and World Bank are sources of coercive isomorphism across developing countries. Good governance initiatives that are promoted by these international organizations often incorporate principles of new public management as the prerequisites for the provision of aid (Ciborra & Navarra 2005; Navarra & Cornford 2005). In developing countries, the notion of shrinking of the state is a developmental policy that often involves privatization and outsourcing projects. These policies stem in part from an association of new public management principles with democracy and in part from economic development models.

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<sup>1</sup> PUMA refers to the Public Management Committee in the OECD, formally established in 1990. The Committee directs the programme on public governance and meets twice a year ([www.oecd.org](http://www.oecd.org)).



However, other studies discuss how new public management has been adopted in a piecemeal fashion in developing countries, given the role of power structures, vested interests in existing arrangements within each country (Polidano 1999; Polidano & Hulme 1999). Therefore, these initiatives are adapted to fit with institutional arrangements, or else they are abandoned or resisted (Dibben et al. 2004). Of relevance here is the study by Chaudry (1997) on economic liberalization policies in the Middle East in the case of Saudi Arabia and Iraq, which were faced with many challenges in the implementation of privatisation projects that relate to institutional arrangements in both countries. Yet it is this legacy of NPM ideas that relate to the use of ICTs that have generated ideas of change and transformation in current e-government initiatives, as discussed in the following section.

## **2.2 E-government as Strategic Change**

E-government is typically associated with the theme of transformation. This refers to the employment of ICTs to achieve significant reorganization of the public sector and a reframing to its role and approach to citizens. E-government carries promises of transformation in many aspects within the public organization such as organizational structure, service delivery processes, and internal and external operations. There is also a new role for street-level bureaucrats as result. In addition to that, e-government is associated with the reinvention of the state and the relationship between the state and citizens (Chadwick & May 2003; Navarra & Cornford 2009).

This section addresses the discourse on e-government and this kind of strategic change through a discussion of some of the themes presented in stages of growth models. The section begins with a focus on models of change to public sector organizations and roles. The section then moves to discuss models with a broader focus on the potential impact of e-government on governance and socio-economic development.

### ***Towards Organizational Reform and New Relationships***

E-government initiatives, across various national contexts, are linked to strategic change agendas. Various institutional actors of the state and international organizations have been involved in the framing of objectives for e-government. In many developing countries, international organizations are behind the mobilization of resources to initiate e-government programs (Ciborra & Navarra 2005). We often find that international organizations and management consultancies depict these visions of transformation of the state through the employment of stages of growth models for e-government (Deloitte Research 2000; World Bank 2002; Accenture 2003).

These models were originally developed to measure technological capabilities and organizational development in the private sector (Galliers & Sutherland 1994). Since the

late 1990's, these models have generated considerable interest in the field of e-government. The idea of employing ICTs for strategic change and reinvention can be traced to the US's National Performance Review initiative to reinvent government which involved 200 consultants who were hired to fix a 'broken government' and ICTs were one of the proposed remedies (Frederickson 1996). Similarly, in the UK, Tony Blair announced the modernization of public service delivery in the white paper on e-government (Dunleavy et al. 2006). In the context of developing countries, international organizations have often outlined the role of ICTs in improving levels of accountability, transparency and contributing to good governance (OECD 2003; World Bank 2004; Ciborra & Navarra 2005; UN 2010).

The most basic form of these models present four stages on the evolution of e-government projects: catalogue, transaction, vertical integration and horizontal integration (Layne & Lee 2001). This model has been adapted over the years from its original form with some variation in the themes included in the model (Baum & Di Maio 2000; Deloitte Research 2000; World Bank 2002; Accenture 2003; K. Andersen & Henriksen 2006). These models in their various forms always present a continuum that a government progresses through over time as ICTs are employed, moving towards the ideal stage of transformation (Ranerup 1999; Layne & Lee 2001; UN & ASPA 2002).

The first stage in most of these models is the computerization of basic public administration and the publishing of information on the Internet. The final stages vary. Some models focus on the public organization and the provision of joint up services and the setup of inter-organizational systems (Ranerup 1999; Layne & Lee 2001; UN & ASPA 2002). Other adapted models present the final stage of transformation in relation to the broader socio-political context of the state, where ICTs eventually lead to civic engagement and participation in decision-making, policy formulation. In the context of developing countries these initiatives are seen as contributors to good governance (Hiller & Belanger 2001; Scott 2001; Wescott 2001).

The theme of transformation in these models describes the stage when information and communication technologies are utilized to their full capabilities. As a consequence, the ways the government functions is transformed. This includes the seamless flow of information and collaboration between, for example, the federal, state, and local as well as the public and private sector (Baum & Di Maio 2000; Seifert 2003). Baum and Di Maio (2000) present one of the earliest stages of growth model for e-government as part of a benchmarking report for e-government for the United Nations (Coursey & Norris 2008). The model depicts the evolution of e-government from a simple web presence to the final stage of transformation. The concept of transformation can also refer to a significant shift in the relationship between the citizens and governments. In the final stage, governments become more citizen-centric and responsive to the needs of the public and this eventually leads towards higher degrees of citizen trust. Similarly, Siau and Long (2005) present the theme of transformation as the fourth stage of their model (before e-democracy), which refers to horizontal and vertical integration.

Davison *et. al* (2005) points out that recent models on e-government implementation have come to incorporate the notion of transformation, which is presented in two ways. One form of transformation is related to service delivery (Accenture 2003), services and practices for agents and the community (Chen 2003). Another form of transformation is related to the back-end operations in public organizations (Hodgkinson 2002). Finally, Davison *et. al* (2005) present a transitional model for e-government implementation that is based on notions of transformation and links ideas from stages of growth models and the model for strategic alignment (Henderson & Venkatraman 1993). The transitional model by Davison *et. al* (2005) describes the status of an e-government project that can be compared to others. The same model also shows the ways to develop towards transformation. Similar stages of growth models and managerial ideas on reengineering have been employed to discuss how implementation of e-government progresses in the context of public sector organization in the Middle East (Sahraoui 2005; Mansar 2006).

An alternative model is presented by Anderson and Henriksen (2006) who critique the conventional stages of growth models arguing that they are based on e-commerce maturity models that focus more on technological capabilities than public sector effectiveness and case handling. They present the Public Sector Process Rebuilding (PPR) model, which is comprised of the stages of: cultivation, extension, maturity and finally revolution. The notion of revolution strikes resemblance with existing themes of transformation that we find in other stages of growth models. Here the revolution stage refers to changes in the internal and external operations of the public organization in terms of data mobility, application mobility across administrative boundaries and data ownership. The latter refers to the ability to trace employees' actions and information on case handling through the Internet. The objective is to shift data ownership to the end users.

E-government is also linked to change in organizational form, for example in localization or centralization. Some e-government initiatives focus on using ICTs to integrate across public sector organizations to share data and provide information and services through one-stop-shops (Wimmer & Tambouris 2002; Bannister 2005; Chadwick & May 2003; Reddick 2005; Klievink & Janssen 2009). Fountain's (2001) technology enactment framework, for example, includes the construct of networks and bureaucracy as organizational forms that are shaped by the ways e-government technologies are enacted in organizational setting. Meijer (2008) explores the extent in which ICTs, particularly email, contributes to the shaping of organizational forms in the public sector. This study reveals some shifts to modes of organizing; however the author does not suggest a post-bureaucratic form. Rather, Meijer (2008) suggests that the bureaucratic traits identified by Weber will be still present for a long period of time.

E-government initiatives have also been linked with achieving (or carrying the potential for) profound changes to the roles of public servants and to their discretionary power. This suggests changes to the nature of street level bureaucracy and operation of the

public sector. Bovens and Zouridis (2002) propose that employing ICTs introduces “screen level bureaucracies” that dictate how the public servant conducts his work, which involves a reliance on the use of computers. The authors also suggest the emergence of system level bureaucracies where discretionary power is shifted into rules that are embedded in the system by software designers. The authors suggest a fundamental change occurs in the creation of rules, and that policy staff, IT staff and system designers now play a role in how policies are practically implemented more than the street level bureaucrats.

### ***Towards Shifts in Modes of Governance***

One of the most central recent debates in the field of e-government is the role of ICTs in changing the interactions of the public sector with citizens (Chadwick & May 2003). We find that literature on e-government in the Middle East echoes such a theme and includes visions and policy objectives that emphasize strategic change (OECD 2010). Studies present a role for global international institutions in the shaping of these objectives and the mobilization of resources and actors for implementation (Saidi & Yared 2002; Al-Jaghoub & Westrup 2003; Ciborra & Navarra 2005; Navarra & Cornford 2009).

E-government carries the potential to change citizen and state interactions through the introduction of new participatory, consultative and managerial models of engagement (Chadwick & May 2003). Similarly, Kakabadse *et. al* (2003) discussed the potential for digital democracy that includes: larger scope for dialogue, new forms of voting, and creates a deeper understanding of public policy through dialogue. Kakabadse *et. al* (2003) argue that ICTs will remedy some of the problems associated with representative democracy through humanizing liberal democracy (Sardar 1996) and enabling direct contact with representatives (Sardar 1996). The authors also allow for potential problems such as lack of consensus and democratic paralysis.

There are a number of models that have incorporated stages relevant to governance, which encompass themes such as political participation and digital democracy (Netchaeva 2002; West 2004; Siau & Long 2005). According to Netchaeva (2002), the final stage of the evolution of e-government includes two aspects: improving the operations of the public sector and the communication between the government, citizens and the private sector. The final stage is for improving citizen participation in the democratic process. This reflects an underpinning assumption that ICTs transform democracy.

The theme of digital democracy is emphasized in Wescott's (2001) stages of growth model for e-government. He presents the final two stages as: promoting digital democracy and allowing for joined up government. Digital democracy refers to two important roles for ICTs. First, e-government has the potential to support participatory and democratic processes in the region that allow citizens to vote and otherwise express opinions. ICTs are also conceptualized to support self-organizing networks, which may contribute to restoring trust and confidence in the policy-making process. This includes a role for e-consultation and electronic discussion groups that shape decisions even though the state retains the responsibility to take the final decision. The final stage of joined-up government refers to vertical and horizontal integration across administrative boundaries and a seamless process of service delivery.

Furthermore, e-government carries the potential to centralize the operations of the public sector and enable, they argue, "needs-based holism" which refers to the provision of public services that are tailored to individual's needs. Cordella (2007) argues that current e-government initiatives carry fundamental and not always desirable changes to principles in the public sector. As such, e-government marks a shift in the values of the public sector as they adopt managerial approaches of customer-orientation as dictated in the re-invention of government movement. Cordella (2007) suggests that e-government

should instead focus on supporting the values of bureaucracy that centre on social justice and equality in the delivery of services to the public.

In a similar theme on e-government and shift in governance, Dunleavy *et. al* (2006) consider e-government as the mark of a new era, digital era governance. The authors' conceptualization sees the employment of ICTs for service delivery as a means to resolve problems and complexities that two decades of new public management initiatives have generated over the years. They argue that digital era governance enables centralization of data within a fragmented public sector due to years of decentralization. Through ICTs, the public sector is able to adopt the principle of needs-based holism to offer services that cater to the need of the client.

A comparable set of issues is present in discourses on e-government and development. E-government initiatives are often linked to good governance programmes (Marche & McNiven 2003) which are initiating democratic activities through electronically mediated forms of civic communication and policy formulation (Marche & McNiven 2003) and contributing to democratic activities and political institutions of the state (Sardar 1996; UNDP 2002; Chadwick & May 2003; Kakabadse et al. 2003).

There are several studies that view countries ICTs as contributors to the process of socio-economic development (Rose & Straub 1998; Dutta & Coury 2002; Musa et al. 2005; Mbarika et al. 2007; Meso et al. 2009). For example, Meso *et. al* (2009) explains the role of information infrastructures in facilitating socioeconomic development through several mechanisms. These mechanisms include: greater access to government information, promotion of participation in the governance process and enhancing transparency and accountability of government officials through accessible information over the Internet and promoting the rule of law.

In the discourses of international organizations, e-government initiatives are depicted as reforming the public sector and contributing to socioeconomic development (Okot-Uma



& London 2000; Ciborra & Navarra 2005). Through the capabilities of ICTs, countries can foster democratic activities through e-voting and the use of rational ICTs to combat corruption and promote transparency and accountability (Avgerou et al. 2009). E-government projects are also envisioned in some countries as contributors to economic development and are associated with the development of an ICT industry in the country to promote economic activities. In many countries, e-government is also part of social development programs that seek to promote a knowledge-based society

So far, this section has outlined various forms of stages of growth models for e-government. These models have diffused into many national contexts and are often used in the assessment of readiness to adopt and employ ICTs, together with other benchmarking activities (UN & ASPA 2002; Kovacic 2005). However, this managerial approach and the emphasis on normative steps to take to achieve successful outcomes tends to overlook the institutional dimensions that have been discussed in several studies of IS and organizations (Ciborra 2002; Townley 2002; E. L. Wagner & Newell 2006; Sturdy & Wright 2008). The next section is focused on these institutional dimensions and presents recent studies of e-government that adopt an interpretivist lens. These studies show how the local institutional arrangements are equally important and can define why ICT projects are adopted and how they unfold in a contextually specific way (Rose & Straub 1998; Dutta & Coury 2002; Musa et al. 2005; Mbarika et al. 2007; Meso et al. 2009).

## **2.3 E-government in the Middle East: Cultural Practices and Persistence**

In this study we see e-government as a universal discourse but in the context of Dubai in the Middle East we need to also pay specific attention to the themes of bureaucracy and socio-cultural norms in the public sector. Ayubi (1990) noted that there are common social dimensions that characterize public bureaucracies in the Middle East, even though there are some variations in the history of public administration between countries. For instance, Egypt's bureaucracy dates back many centuries, whereas the Gulf region's public sector started from scratch in the 20<sup>th</sup> century (Ayubi 1990). As is the case with many developing countries, most public administration features are inherited from the West who in various ways colonized them in the early 20<sup>th</sup> century. Many Middle Eastern countries after independence, usually past 1945, showed patterns of replicating western practices for public administration (Jabbra 1989; Ayubi 1990).

One of the main problems that public administrations in the region faced over the past decades was the lack of specialized expertise to tackle social and economic development. There were many developmental goals set after independence and there were public services to be delivered such as health, education and infrastructure services (Jabbra 1989). Ayubi (1990) explains how bureaucratization grew substantially in the region at that point due to several factors such as the perceived prestige of public officer as contributor to development and the role of public officer as people who interact with and assist the private sector. Ayubi (1990) also sees the Egyptian model as influential in many other countries in the region, since Egyptians acted as carriers of their country's experiences when they were employed in the Gulf. Another factor was the rise in graduates with degrees who were seeking employment in the public sector.

Jabbra (1989) argues that public bureaucracies in the Middle East region have combined western practices with local values and practices and there has been limited success in

doing so. The Western principles have been developed to cope with problems of rigidity through human resource movements and behavioural science ideas. The author notes that there were various countries with civil servants who experimented with ideas of total quality management (TQM), and team building, which are ideas that relate to NPM. Jabbra (1989) goes on to explain that there has been a lack of commitment in exploring solutions to local public administration challenges, and rather they have been subject to an inflow of international experts who spread universalistic principles. Other issues that arise in combining the two is that they then operate with no standards to evaluate local administrative systems and cultures. Moreover, there are cultural discontinuities between the two sets of values from the west and non-west contexts (Jabbra & Dwivedi 2004). Local contexts in the Middle East have deeply rooted social and administrative values, which incorporate ideas such as commitment to family and the clan, and these are concepts that western principles generally fail to change.

Even after the early period of development, powerful international institutions such as the IMF and the World Bank have continued to influence governance in the region (Jabbra & Dwivedi 2004). According to Jabbra and Dwivedi (2004) even with these isomorphic forces at play, there are still particular administrative features of bureaucracies in the region. According to the authors these features include: over centralization, outmoded systems, sponge employment, rigidity, and complexity of bureaucratic rules, salary structures and staff turnover. As for social and cultural features they include: nepotism, patron-client relationship, laxity, the local economic culture, and lack of accountability, as well as the ways in which bureaucrats exercised their power.

In summary, these studies discussed so far depict the nature of public administration in the region as engaged in repeatedly the same patterns of actions of the past. They are considered as replicating western principles of management that have little relevance to the regional context. Jabbra and Dwivedi (2004) argue that the way forward is to incorporate local customs and spiritualities to improve the theories that are exported to

developing countries to reflect their specific context specific features. The authors argue that change in the public sector requires socialization processes that span the family and various societal domains.

These ideas on institutional arrangements within Middle Easter public sector are relevant to studies of e-government that focus on the social, political and economic dimensions (Avgerou & Walsham 2000; Fountain 2001; Avgerou 2002; Gasco 2003; Jaeger & Thompson 2003; Avgerou & McGrath 2007; Contini & Lanzara 2008). The long history of new public management and the reinvention of government movement have shaped objectives for e-government and cultivated expectations of significant cultural and organizational change. However, these projects encountered challenges due to the presence of institutionalized practices and norms that is difficult to change. For example, Dibben et al. (2004) discuss the tensions and contestation that exists on the ground in public administration of developing countries. Their study depicts how new and imported ideas and practices are adopted in the public sector or resisted. In the context of e-government studies, Fountain's (2001) work on technology enactment highlights the significant role that the context and institutional arrangements play in how e-government is designed, developed and used.

There are various issues raised in institutional studies of e-government. For example, studies show the link between e-government and institutional rules (Gasco 2003) and how public sector ICT projects shape policies (Dunleavy & Bastow 2001) and constrain existing ones (Kraemer & King 2006). The persistence of existing belief systems, norms and myths (Margetts & Dunleavy 2002) can lead to behaviour of isolating and ignoring ICTs in the public sector by managers (Heeks 1999). Studies also show that there is a difference between the values that are embedded in these systems and projects with those that already exist in the public sector (Wescott 2001; Introna et al. 2010). There have been similar themes of cultural persistence in studies of developing countries, where the success of e-government in organizational change has been marginal because of the

persistence of institutionalized dimensions, such as the social group that the public servants are part of and their status in society (Madon 1993; Madon 2009).

The role of social dimensions in the success of e-government implementation has been a strong theme in studies that adopt an Actor Network Theory (ANT) lens (Walsham & Sahay 1999; Heeks & Stanforth 2007; Azad & Faraj 2009). For example, Walsham and Sahay's (1999) study of the development of a GIS project in India illustrates the mobilization and enrolment of various actors into the network, which included GIS vendors, the development organization USAID, Indian scientific institutions and the local public administrators from various districts.

Another significant theme in studies of e-government, which are based on the ANT lens, is the role of interests and power relationships between actors. Observing the process of forming networks enables us to see different interpretations and interests that surround the e-government project, that come to shape outcomes at later stages. The actors exert influence to enrol actors into the network and align their interests. The alignment of interests of actors often involves negotiation and is important in maintaining the network until a state of stabilization is reached and the technological artefact is taken for granted and institutionalized. For example, Azad and Faraj's (2009) study of the implementation of a land registration system illustrates differences in interests between the technology developers who inscribe the system with values and practices that are resisted by the users of the systems (the surveyors), since it changes power relations.

ANT studies of e-government also emphasize the acceptance or resistance of obligatory passage points (OPP) that connect the network of actors together. Changing the OPP would often result in the reconfiguring of networks, and pushing the token in another path (Elbanna 2007). The changing of OPP and the reconfiguring of networks is illustrated in Azad and Faraj's (2009) micro level study of the institutionalization of a land registration system in the context of a Mediterranean country, by tracing back the

practices that are involved in forming durable associations of roles, routines and artefacts. Their study, on the adoption of a land registration mapping system, shows the reconfiguration of networks and obligatory passage points over the course of the project.

Azad and Faraj (2009) show that there was a new obligatory passage point of the Map Update function that replaced the manual procedure of working with real maps. The new application failed to become the new OPP given the different viewpoints of the survey system design team and the surveyors who were to use the system. There was an addition of a new procedure to include the managers' authorization in the process of Map Update as a new OPP. The managers initially resisted this since it represented more work to be conducted. However, after negotiations, they were enrolled into the network. This coerced the surveyors to use the system to avoid sanctions. The study reveals the role of OPP such as surveyors who want to hold on to their power in the map update process, introducing a new function in the system that failed to become an OPP, At a later stage, department managers were enrolled to become the OPP in the project and the enactment of the new network led to the institutionalization of the new system.

## **Perspectives on E-government Implementation**

The discussion now turns to the implementation of strategic change agendas for e-government. The majority of work in this area falls under the category of organizational level studies of e-government, often in the form of normative guidelines that are derived from success and failure case studies. The section also presents studies on implementation of these systems in terms of macro-level and agency-centred perspectives.

### **2.4 Managerial Perspectives and Organizational Level Analysis**

For a long period of time, a managerial perspective dominated e-government studies. Such a perspective is exhibited in studies that adopt the stages of growth model to depict the evolution of e-government projects (Layne & Lee 2001; Chen 2003; Davison et al. 2005; Wagner & Newell 2006). Similar models have been promoted by consultancies and international organizations that assist public organizations in implementing such systems (Baum & Di Maio 2000; Deloitte Research 2000).

The managerial perspective in studies of e-government implementation is an extension to the body of research that are based on strategic alignment concepts. Strategic alignment presents IT as resource, along with other organizational resources, that can be bridged with the organizational strategy in order to exploit IT capabilities and opportunities within the external environment. As proposed by Henderson and Venkatraman (1993) the strategic alignment model presents IT as a resource that needs to be aligned with the external strategy and the internal processes and infrastructure of the organization.

The influence of the strategic alignment model is evident in the field of e-government and takes form in two themes. The first theme is constructing alignment between the e-government strategy and the public sector organization's internal processes and infrastructure. E-government strategies and implementation often incorporate re-

engineering activities to create integrated and more efficient public services. Davison *et. al* (2005) present a number of examples on less successful projects in developing countries that have a system's focus. These case studies develop a web portal with inadequate re-engineering of internal processes, and thus the information system is misaligned with the internal dimensions of the public sector to create efficiency and a seamless online service delivery (Davison et al. 2005).

This theme is illustrated in studies of business process re-engineering and represents a challenging endeavour for more progressive e-government projects that have moved beyond publishing static information to the delivery of online services and transactions on their web portal (Layne & Lee 2001). This often involves the process of analysing and reengineering existing work processes to create inter-departmental and inter-organizational systems. A precursor to the re-engineering process is the negotiation between various departments and interventions to allow for work processes to be changed (Fedorowicz et al. 2009).

Adopting such a perspective of alignment in studies of e-government often focuses on the challenge of re-engineering within a complex administrative system that requires unravelling and reworking institutionalized ways of working. As Davison *et. al* (2005) point out, some of the complexities encountered may have to do with a historical dimension to public bureaucracies. They explain that some administrative systems within developing countries were established and shaped during the period of colonization. Some of the inefficiencies encountered in public bureaucracies in the Middle East also are linked with a history of working with administrative science models and principles that originate from developed countries and are not catered for cultural and structural features of their own context (Jabbara & Dwivedi 2004).

The strategic alignment model also includes the theme of bridging the e-government strategy with the external environment, which includes citizens, the business community



and other government entities (Davison et al. 2005). For example, Chan and Pan (2008) present the case study of e-government in Singapore that has working on merging two portals for the citizen and the business community in order to strategically align with the e-government' mission statement of one government and multiple agencies. A focus on alignment may take into account the motivation of various collaborating agencies to create inter-organizational systems to offer services through single access point. This has been extensively discussed by Fedorowicz *et. al* (2009) who present e-government success as contingent upon an alignment between the motivations of multiple government agencies.

The strategic alignment model conceptualizes challenges to success in terms of the presence of different values among the collaborating public agencies, which may lead to conflict and resistance. Other challenges include the level of readiness they have, as well as the institutionalized roles and practices, such as the power to control data access (Fedorowicz et al. 2007). Even with the pervasiveness of the model in the management field it has been criticized for its assumption of stability and persistence of roles (Ciborra 1997). For example, champions from each government department who are responsible for the development of requirements for the systems and evaluation of the systems may change over time (Fedorowicz et al. 2007). Therefore, success of e-government here is not only contingent on planning alignment between IT and the internal and external environments, but also on the stability of roles of staff, behaviour and motivations of collaborating agencies. For that reason, we find that some argue that strategic alignment depicts a dynamic process more than an actual outcome of alignment (Ciborra 1997). As Ciborra (1997) explains both the strategy and the technological infrastructure are subject to tinkering, improvisation and drift.

The adaptation of the strategic alignment model for the public sector faces the challenge of working within a complex external environment that consists of policies, government actors, international organizations, private sector firms and the public. Even after these e-

government systems are developed technically, there are problems of low take up of services due to institutionalized practices, the symbolic value of visiting the public sector organization, infrastructure related problems and IT literacy (Davison *et al.* 2005). There are also examples of e-government projects that have aligned with the external environment, such as Canada, which has introduced legislation and regulatory changes to support e-government and several, IT training programs for the public (Davison *et al.* 2005).

The strategic alignment model has been adopted mainly as a tool for planning the implementation of e-government projects; however it has significantly shaped the framing of expectations for outcomes. An example of this framing of success and failure is Gil Garcia *et. al*'s (2007) review of e-government studies to highlight implementation challenges and success strategies. The authors present the information and data strategy and the organizational and managerial strategy to align IT with the internal processes and infrastructures. These strategies include suggestions of ease of use, IT training, improvement of previous re-engineering and better communication methods. The other success strategies are directed towards aligning IT with the external environment through the legal and regulatory strategy and the institutional and environmental strategy. The authors include suggestions of developing government wide IT policies and working to gain executive and legislative support to change some formal institutions.

The following section present studies focus on processual views that explain how the process of implementation unfolds over time. The next section presents a macro level analysis that draws on the role of social structures, policies and international organizations as sources that shape the implementation of the systems.

## **2.5 Macro-Level Analysis**

Research on e-government has begun to employ social theories on institutional and policy perspectives (Coursey & Norris 2008), and suggest that a perspective based on ideas from public management should be adopted (De Marco & Sorrentino 2006; Cordella 2007). For instance, De Marco and Sorrentino (2006) present the case of an Italian e-government initiative for the implementation of an electronic and magnetic ticket system. The project experienced shifts from plans and the rethinking of them. The authors argue that there is a need to go beyond the administrative rhetoric (March & Olsen 1984) and the top-down approach when interpreting e-government project implementation, and more towards a multi-disciplinary perspective. De Marco and Sorrentino (2006) see public decisions as mutual adjustments between actors. Thus, public programmes are processes without a solution of continuity but an uninterrupted chain of decisions.

It follows, therefore, that the implementation of public policies is a process where problems cannot be identified a priori, but change continuously along the way. As De Marco and Sorrentino (2006) suggest, incrementalism or ‘muddling through’ is the appropriate way for government policymaking, given the uncertainties due to social interaction and political conflicts from the past. Such an approach coincides with ideas of “organizing” instead of “organization” (Weick 1995), and cultivation instead of design (Ciborra & Hanseth 1998). Similarly, Cordella (2007) uses ideas from public management to guide the implementation and evaluation process of e-government. His argument is that most projects follow models from the private sector that are based on notions of efficiency and cost-savings, neglecting to take into account the complexities of the public sector and the values of bureaucracy.

The role of national policies in the implementation of e-government has also been central theme in the field (Heeks 1999; Dunleavy *et al.* 2006). For instance, Heeks' (1999) book: *Reinventing Government in the Information Age: International Practice in IT-Enabled Public Sector Reform* depicts e-government projects as an extension to a history of new public management initiatives. In a similar discussion of NPM, Dunleavy *et al.* (2006) argue that e-government represents the mark of a new era, the digital governance era and the demise of new public management.

In an earlier work, Dunleavy *et. al.* (2001), discuss the diffusion of similar approaches to ICTs in the public sector in relation to institutional influences. They explain how countries are confronted with situations that resulted in policy learning and transfer. This has been mediated by intermediary organizations, for example the OECD (Dunleavy *et al.* 2001). The result is the emergence of common approaches among these nations. Another study by Margetts *et. al.* (2003), discusses the relationship between policy innovations and technology innovations. The authors present a comparative case study of Britain and the Netherlands to illustrate the different approaches that these governments have taken in the development of IT and outsourcing and the result this has on policy innovations. The findings suggest that countries with few strong IT service providers, as is the case with Britain, eventually encounter a higher transaction cost with policy innovations. In contrast, countries that minimize the dependency on suppliers experience lower transaction cost when innovating in policies (Margetts *et al.* 2003).

Similar studies on developing countries explore the relationship between policies related to new public management and e-government (Al-Jaghoub & Westrup 2003; Ciborra & Navarra 2005; Navarra & Cornford 2009). For example, Ciborra and Navarra (2005) present the case of Jordan's e-government project that is seen as driven by the concept of the minimal state. These ideas were promoted by international development agencies in Jordan at the time. The authors highlight how this approach to e-government may not be conducive to socio-economic development. Similarly, a study by Al-Jaghoub and

Westrup (2003) explore Jordan's strategy to develop a competitive ICT sector which links to e-government projects and the country's definition of itself as a "competitive state".

There are a limited number of studies on e-government that have adopted an institutionalist perspective, or employed some of its concepts (Heeks & Bailur 2007; Yildiz 2007; Coursey & Norris 2008). The institutional themes have varied and include: motivations for e-government that include citizen-centric and global legitimization pressures, the role of organizational and institutional barriers in attaining planned change, a classification of virtual organizations or forms of e-government adoption and use<sup>2</sup>, the use of e-government systems and the impact on institutional arrangements where the findings suggest that there is no direct link with institutional change and efficiency, and finally, transparency and changes to mental models of actors (Fountain 2001; Devadoss et al. 2003; Luna-Reyes et al. 2005; Stoltzfus 2005; Barca & Cordella 2006; Henriksen & Damsgaard 2006; Azad & Faraj 2008; Meijer & Zouridis 2004; Fountain 2009; Cordella & Iannacci 2010; M. Smith 2010; Jun & Weare 2010).

Adopting institutional concepts to explore the implementation of e-government suggests that the process is not linear. Instead there are feedback loops and accumulative effects on structure, practices, knowledge and system requirements and functions (Jennings & Greenwood 2003). For example Azad and Faraj (2008) present the case study of an e-government in a Mediterranean country and how the project revived after time. They explain how one of the factors that contributed to this was the change in Government and the return of the minister that has initiated the project years ago. Another example of this is in Cordella and Iannacci's (2010) study the e-government projects are considered as carriers of reform aims, in a context where policies shift and the projects may outlive reform.

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<sup>2</sup> The institutional aspect was part of the socio-organizational dimension.

E-government systems implementation and use is linked to local interactions with broader structures within particular contexts. For instance, Horton and Wood Harper (2006) present a comparative study of three police institutions in the UK that exhibit different trajectories in IS implementation which are shaped by social interaction and decisions taken with each context. The paper relates these social interactions with cultural and historical aspects of each context and significant events that took place such as a national IT initiative. Luna-Reyes *et. al* (2005) similarly discuss the relationship between micro-interactions and the outcomes of information system development within a US state agency. The authors discuss the reciprocal relationship between these micro-interactions and structures such as organizational design, knowledge about practice, system requirements and system functionality.

The relationship between the unfolding of micro-events with macro-structures has been presented in the study of the implementation of a financial information system in Sri Lanka that employs actor network theory to explore how actors that fund the system and those that implement it are mobilized (Heeks & Stanforth 2007). Another example is a study by Wastell (2006) who explores the link between national policies of evidence-based performance in the UK and different outcomes in the implementation and use of an inter-organizational system, referred to as the Multi-Agency Data Exchange (MADE). The findings show how one group of organizations using the GIS system considered it a strategic tool for decision making and a means to achieve targets of combating crime, whereas the other group considered it more of a monitoring device to evaluate their performance and holds them accountable to central government.

Other studies also emphasize the role of networks of actors in shaping the trajectory of information system implementation in the public sector (Walsham & Sahay 1999; Heeks & Stanforth 2007). For instance, Madon (2005) discuss the role of the state in constructing and managing relationships between actors in society and the state and explores the extent that this contributes to the sustainability of tele-centers in Kerala,

India. Madon (2005) employs ideas of the sociology of governance and unravels the case of tele-centers that have been the focus of many government officials and private sector firms to introduce e-government applications and commercial services yet continue to be mainly used for socialization using web-based applications. Similarly, Walsham and Sahay (1999) explore the implementation of GIS in a government ministry in India and discuss the problems that arise from the lack of alignment between actors and interests. This also coincides with Heeks and Stanforth's (2007) work on Sri Lanka, which was discussed earlier, which emphasizes the mobilization of actors in a network during the implementation process

## 2.6 Agency-centered Perspectives

The processual view is also illustrated in studies of e-government implementation that adopt a focus on the role of agency. The link between local actions and macro-phenomenon is addressed in the literature to analyse the reciprocal relationship between technology and structure. Fountain's (2001) seminal book *Building the Virtual State: Information Technology and Institutional Change* presents the Technology Enactment Framework (TEF) that depicts the dialectic relationship that exists between technology, bureaucracy, organizational networks and institutions. Fountain (2001) illustrates the enactment of technology in several examples of e-government systems in US public organizations. The model is discussed further in the thesis.

A focus on organizational actors' perceptions and expectations during the implementation and use of these systems is also a focus in the literature (Schwarz 2002; Chen 2003; Gil-Garcia et al. 2007; Azad & Faraj 2008; Chan & S. Pan 2008; Chou et al. 2008). The study by Azad and Faraj (2008) discusses the process by which two competing technological frames stabilize as negotiations take place and the result is a workable system. Azad and Faraj (2008) present the case study of a public organization in a Mediterranean country that has been working for 10 years on an e-government project sponsored by the World Bank. The case study describes two competing technological frames of two groups, the project unit and donors who considered the e-government system as a tool for centralization to achieve targets of efficiency and cost savings, and the management and employees within the public organization who viewed the system as a control mechanism and resulting in unwelcomed change in work patterns. Negotiations took place and a truce frame emerged to get on with work, with resulting adjustments made to the system. The authors note that this stabilisation of frames was triggered by a number of events that took place in the broader socio-political context of the country. Similarly, Gil-Garcia *et. al* (2007) explore six information sharing



projects in the public sector for a period of four years to understand the relationship between perceptions of impediments to information sharing with expected benefits.

Schwartz (2002) presents another case of the reciprocal relationship between perceptions and use of an information system within public organizations. The author points out how the new system resulted in reinforcement of authority structures in the public organizations shaped by the perceptions of actors using the system. The group's social identity as subordinates was reinforced and enacted through the use of the new system. Similarly, Margetts and Dunleavy (2002) discuss the role of perceptions of technology in the context of public organizations and how that shapes outcomes. The authors present technology as benign, ephemeral (2 more myths). This coincides with the work of Chou *et. al* (2008) who explore motivational and structural factors that shape collective action in e-government.

Finally, a study by Silva *et. al* (2007) illustrates the different perceptions of stakeholders about information system alignment in the context of five Chilean professional organizations, two of which are public (hospital and university). The authors set out to understand how actors in these organizations view the information systems. They present three conceptualizations on the alignment of information systems with the organizational context, which include: managerial, emergent and critical. Findings from the study suggest that organizational members of public organizations exhibit managerial views of technology. These actors consider technology as a means to create alignment with the organization and its objectives. They also perceived bureaucracy as a hindrance to alignment. The study shows that there were also views that considered the public organization as reactive in skill acquisition and IS processes. Finally, there was also the critical view that considers IS strategy as a concept that makes little sense in the context of the public sector.

Pan *et. al* (2006) present a study on the direct role of agency in the implementation and use of e-government systems and outcomes. The authors discuss how actors identify a failing course of action during the implementation of an e-procurement system in a local UK authority and then adopt a newer strategy. The authors analyze the case further in another study (Pan et al. 2006) where they explore competing forces that influence commitments to certain action and decision-making. Similarly, Boudreau and Robey (2005) explore how and why enactments of IT shift over time. The authors discuss the case of a US state agency setting up an ERP system to replace a legacy financial information system. Two distinct enactments are identified over a period of time. One form of enactment is inertia, where technology is used to retain existing work patterns. The other form of enactment is reinvention, where the actors came up with work practices that allows them to accomplish their tasks using the new system. One of the findings in their study is that there is transition from one enactment to the next through improvised learning. They also see a role for contextual factors such as power users, informal learning and social interaction (Boudreau & Robey 2005).

## **2.7 Summary and Conclusions**

This chapter has presented the different streams of literature that this research derives ideas and concepts from to conduct the empirical investigation and theoretically analyse and discuss findings. The literature review was based on work in the fields of e-government, public sector administration and information systems. The literature review was divided into two main themes: conceptualizations of e-government and perspectives on information systems implementation in the public sector. The review of literature on the conceptualizations of e-government is divided into three sections: e-government as a continuation with the past, e-government as strategic change and e-government as cultural practices and persistence.

Studies of e-government that have taken into account history and contextual dimensions reveal the role of institutionalized practices and socio-cultural norms in shaping the adoption and development of e-government systems. Such a conceptualization of e-government comes in contrast to the dominating studies of e-government as strategic change. The historical perspective on IS in the public sector, draws on two case studies of IS development in the UK's public sector: the department of social services and the National Health Service. The case studies illustrate similar objectives at the time such as improving efficiency, integration and adopting a 'whole person' approach in dealing with members of the public that require services and overcoming fragmentation.

The section then provided an overview of the concept of new public management (NPM), where it originated from and how it has spread to other countries across the world (isomorphism, disembedded institutions and policy learning were all concepts used to discuss this). There is also the issue of different phases in the adoption of such policies, which sets different countries apart. The role of IT in NPM is discussed to highlight how it reinforces ideas of decentralization, marketisation and resource

management. As discussed earlier on, there are arguments that IT should not reinforce NPM, but support bureaucracy instead, since it is faced with an increase load in information handling. NPM might also be adopted in different ways and have different underpinning ideologies and thus NPM could have an impact on how IT is developed and used in different contexts.

The chapter then moved to focus on the implementation of e-government projects and the different perspectives adopted. E-government is a relatively new field that emerged in 1999 and was dominated by managerial models of stages of growth that provide normative suggestions and predictions of change. However, as we have explained in this chapter, e-government models often neglect to take into account the rich experiences of ICT implementation in the public sector for more than three decades in the context of developed and developing countries. The section presented processual views of e-government systems implementation that focus on macro and micro level processes at play. The section then explored mixed results and the role of the socio-political context in shaping outcomes. Some aspects of the socio-political context included policies, unions and institutionalized practices and norms. We find a similar set of institutional and socio-cultural challenges faced in historical ICT projects in the Middle East region that have shaped the effectiveness of e-government initiatives.

Our case study of course reflects all three streams of e-government implementation processes. For example, the concept of strategic change and e-government is reflected in the discourse of international organizations and management consultancies that are encountered by the ICT professionals working on the project. For that reasons the section on strategic change and e-government presents the some of the common and dominant understandings of e-government systems. At the same time, the analysis showed the role of interacting institutional influences and micro level perceptions and actions in how these projects unfold.

## **Chapter 3: Theoretical Framework**

The main theoretical framework employed in this research study is the technology enactment framework (Fountain 2001) referred to as the TEF. In essence the TEF is a synthesis of the two theoretical ideas of sensemaking and of institutions. In order to address the research's theme of local enactments of e-government systems by ICT professionals, two TEF constructs are unpacked. First, enacted technology is elaborated by using concepts of sensemaking and enactment (Weick 1979; Weick 1995). Second, the construct of institutions is enriched with concepts of institutional pillars and carriers (Scott 2001). This research is also premised on the assumption that there are social and material elements that are introduced from other contexts into the public sector. Such global influences are not emphasized in the TEF and for that reason the theoretical concept of formats (Sassen 2006a; Sassen 2006c) is introduced to enhance the framework.

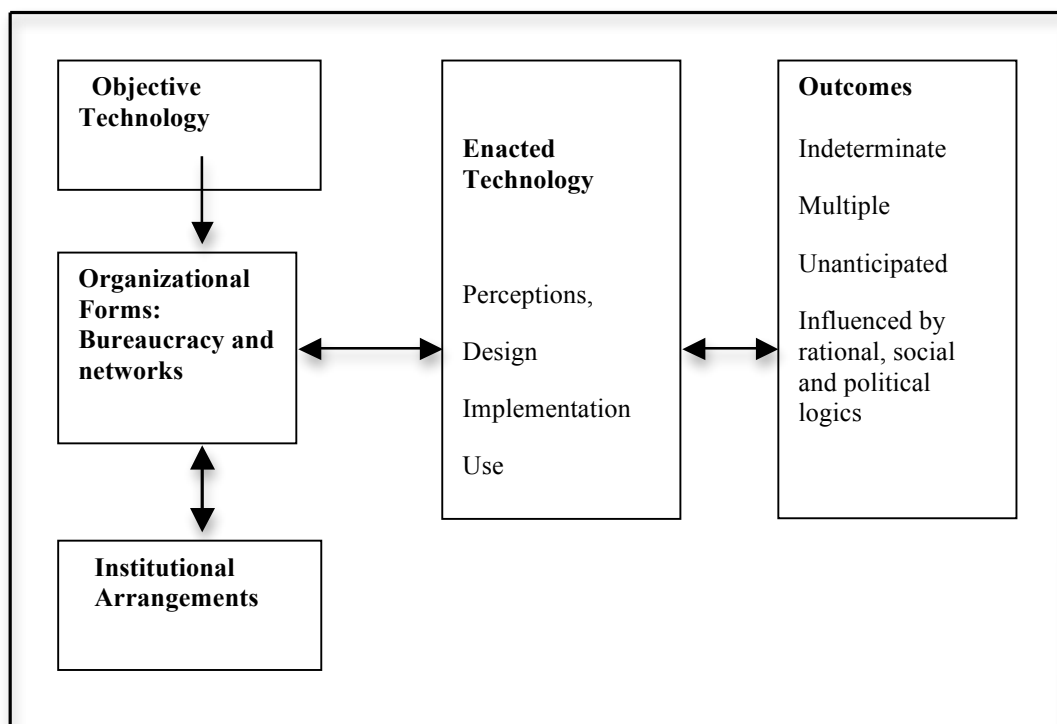
This chapter is comprised of five sections. Section one is an overview of the TEF that describes the framework's main constructs. The section then presents a justification for its employment in this research. Section two unpacks the construct of enacted technology in the TEF and what is meant by enactment by elaborating on the concepts of sensemaking and organizing (Weick 1979; Weick 1995). Section three unpacks the construct of institutions by drawing on Scott's (2001) work. The section elaborates on what institutions consist of, how they influence actions and how they are travel. Finally, section four presents the theoretical proposition of formats (Sassen 2006c), which is

introduced in this research to enhance the TEF. The chapter concludes with a summary of key ideas.

### 3.1 The Technology Enactment Framework

Jane Fountain's (2001) seminal book *Building the Virtual State: Information Technology and Institutional Change* has been a valuable resource for researchers who focus on public sector ICT projects and initiatives. The technology enactment framework (Figure 3.1) depicts the relationship between ICT design, implementation and use and the institutional arrangements in the public sector. By capturing these dynamics, the TEF bridges institutions and actions in the context of e-government projects, which is where the value of the framework is derived. The TEF is comprised of five main theoretical constructs: objective technology, institutional arrangements, organizational forms, enacted technology and outcomes. This section briefly describes the main constructs of the TEF, and presents justifications on why it appropriate to be employed in this research and some of its key limitations.

Figure 3.1 Technology Enactment Framework



### ***The Constructs Objective Technology and Enacted Technology***

The TEF clearly makes the distinction between objective technology and enacted technology. Objective technology refers to material artifacts such as hardware, software and networks and the functions and capabilities that have been designed into these artifacts by engineers. In contrast, the construct of enacted technology refers to technology in a performative sense (Weick & Quinn 1999; Feldman 2000; Feldman & Pentland 2003) and represents a process. More specifically enacted technology captures the ways in which individuals in the public sector “... struggle to make sense of, design and use new IT” (Fountain 2001, p.89). According to Fountain (2001), enacting information systems represents reproducing existing rules, routines, norms and power relations. The TEF emphasizes that enacted technology is not merely a cognitive process; it is also conditioned by the social, cultural, political and institutional structures that individuals are embedded within. Thus, the TEF is premised on the idea of bringing sensemaking and institutions together.

Fountain’s (2001) theorization of technology and the processes surrounding its enactment carries some similarities with other studies, such as those that discuss the social construction of technology (SCOT) (Bijker et al. 1989) and the study of technology-in-practice (W. J. Orlikowski 2008). The performative dimension of enacted technology is evident when Fountain (2001) states “the flexibility, decomposability and functionality of the web and related information technologies mean that a system’s objective characteristics may differ substantially from those that are actually used.” (p. 89). This conceptualization of technology is similar to Bijker and Pinch’s (1989) work on the interpretive flexibility of technology, where design is an open process that is based on inter-group negotiations within the social groups involved (Brown 2001).

However, the TEF explicitly incorporates the role of structures in the shaping of technology, whereas most studies that are based on concepts that are drawn from SCOT focus on the role of agency in shaping technology. Studies of SCOT were criticized for the focus on agency to understand the process of the shaping of technology without taking into account the broader social, cultural and political milieu (Klein & Kleinman 2002). The TEF is different from such studies in that it portrays enacted technology as performative and shaped through the interactions that take place within the context of the public sector and influences of institutional arrangements. In contrast, studies drawing on SCOT focus on the closure and stabilization of technology as social groups reach a consensus over what the technology represents.

### ***The Construct of Organizational Forms***

The TEF maps out the complex landscape that ICTs and organizational actors are embedded within in the public sector. The framework places emphasis on the two themes of bureaucracy and inter-organizational networks, which are integral to the understanding of how technology is perceived and appropriated. Fountain (2001) points us to consider the key characteristics of modern bureaucracy, which include: official jurisdictional areas, official hierarchy, documentation, training of officials, and technical expertise of staff and adhere to neutral and impersonal rules. This concept of impersonality has been contested by several academics over the years (Lipsky 1980; Du Gay 2005). Fountain (2001) argues that with the advent of digital technologies, e-government is likely to instill higher degrees of standardization, rationalization and rule-based systems in the public sector as qualities embedded and inscribed into ICTs. Even as e-government systems are enacted in ways that increase coordination and communication, they will also increase levels of control. In either case the bureaucracy as an organizational form and institution plays a role in the nature of these enactments. Inter-organizational networks, she argues, present puzzles since actors are



able to coordinate activities to develop a form of governance that is neither market driven nor hierarchal. This conceptually challenges organization, rational action and self-interest that are embedded in bureaucracy (Fountain 2001).

### ***The Construct of Institutional Arrangements***

The construct of Institutional arrangements in the TEF refers to cognitive schemas, cultural, socio-structural and legal institutions. Fountain's (2001) framework presents enacted technology as a process where "...individuals in institutions tend to enact new information systems to reproduce existing rules, routines, norms, and power relations, if institutional rules are clear and no salient alternatives uses are visible in the environment." (p. 89). The TEF emphasizes that institutional dynamics influence organizational forms, enacted technology and enacted technology. Based on these dynamics we assume that the enacted technology is ontologically performative and is continuously shaped by people who are influenced by these arrangements. Fountain's (2001) work points out that there are three propositions that are derived from the TEF, which in essence relate to institutional arrangements. First, actors in the public sector enact existing performance routines and network relationships even when they are designing and using new web-based technologies that offer many other possibilities (p. 90). Second, actors tend to enact technology in ways that pursue personal interest in terms of their roles, tasks and social networks. Finally, enactments of technology sustain deep institutions that have been historically constituted.

### ***The Construct of Outcomes***

The propositions presented by Fountain (2001) present ICT implementation and use as reproducing the existing institutional arrangements through local actions. Yet the outcomes are also presented as indeterminate and multiple (p. 91), and this highlights the complexity of having local actors make sense of and enact technology in ways that are conditioned by

institutional arrangements. The nature of outcomes is illustrated by Fountain (2001) in three case studies of technology enactment. The first two cases are of the international trade data system (ITDS) and the business advisor, both of which are cases of inter-agency integration through ICTs. The third case is of organizational networking in a military institution. The first case of ITDS reveals contesting enactments between importers and exporters. The outcomes show that the existing cultural and cognitive pillar was not aligned with the new practices that are inscribed in the new system. The second case of the US business advisor faced challenges of overcoming institutionalized ways of working that were obstacles to inter-agency collaboration. The enactments in both of these cases revealed that even though the systems were built in a speedy way there was also a slower process of interagency structural adjustments underway. Finally, the third case study presents a maneuver control system in the military that reveals enactments that retain institutionalized roles as the new system challenged institutionalized perceptions of their roles.

### ***The TEF in E-government Studies***

There are numerous studies of ICT in the public sector that have employed an institutional lens, particularly in recent years as studies move from a functional approach for e-government to an interpretive stance. Even though the TEF has generated substantial attention in the field of e-government there are very few examples of the employment of the framework. There are two prominent studies of the TEF in e-government. One example is Cordella and Iannacci's (2010) study of an e-government project in England and Wales' justice systems. The argument set forth in Cordella and Iannacci's (2010) study is that these e-government projects are carriers of NPM policies and objectives from the past. As the paper points out, the aim of the project was to improve efficiency, but the outcome was far more complex. The project undermined the separation of functions between the police and the prosecution, which meant that it was unclear who was in control of the investigation.

Cordella and Iannacci (2010) go on to argue that e-government projects exist in a context where the policies shift and the projects are inscribed with values and objectives that are part of past reform initiatives. This is evident in other examples of information systems that were developed in a time where the objective of departmentalism was a priority, and later encountered change in times of joined up government (Dunleavy et al. 2006; Cordella & Iannacci 2010). Another example is Luna-Reyes *et. al*'s (2005) study of the development of an information system in a US state agency. The authors employ the TEF to discuss the reciprocal relationship between these micro-interactions and structures such as organizational design, knowledge about practice, system requirements and system functionality.

### **3.2 The Appropriateness of the TEF for this Research Study**

There are numerous theoretical frameworks that can be employed to study the implementation of e-government projects and their outcomes. Here the use of the TEF is justified by comparing it to two theoretical models that are commonly used in studies of e-government to show what makes the TEF a more appropriate theoretical framework for this research. The TEF is compared to the stages of growth models and Actor Network Theory.

As discussed in Chapter Two, one of the most common lenses is the stages of growth models for e-government that are essentially adapted from maturity models for e-commerce. The stages of growth models present a useful conceptualization on how to progress in the implementation of e-government systems from web publishing to transactions over the Internet to the provision of intra-organizational services in a seamless way. The stages of growth model implicitly suggest that there are criteria to evaluate the success of e-government implementation, and therefore outcomes are framed in terms of the dichotomy of success and failure.

As Coursey and Norris (2008) explain, e-government includes a higher normative value for each subsequent stage in the model. Even though the use of these models has gained momentum over the years, there has been a critique of a lack of theorization of the processes of e-government implementation (Coursey & Norris 2008), which this research sets to achieve. For the purpose of this research there is a need to go beyond describing the stage that the e-government project is at. Also, the stages of growth model do not provide any constructs to classify data related to the process of e-government implementation, and local perceptions and actions.

Another theoretical framework adopted in interpretive studies of e-government projects is Actor Network Theory (Callon et al. 1986; Latour 1987). ANT offers a unique vantage point

when examining the initiation of e-government projects, through its conceptualization of a network that consists of macro level actors such as international organizations, local organizational actors and technology. All of these actors are considered to have equal weight and contribute to the formation and maintenance of the network. The formation of this network occurs through the process of translation, which is one of the central components of this theory. Through translation actors with various interests are enrolled into the network and alliances are formed. The constructs in ANT are useful in examining the complex landscape in which e-government projects are deployed, since it takes into account both local and global actors, spanning beyond the macro and micro division. This is of particular relevance in the context of developing countries where there are several global actors involved in the planning and implementation of these projects such as international organizations and management consultancies and the state (Walsham & Sahay 1999; Heeks & Stanforth 2007).

ANT also enables us to see the vested interests and power relations of actors that are enacted, and how they come to shape the objectives, design decisions and outcomes of these projects. The theory also provides a lens to examine problems that arise beyond technical problems, but in terms of resistance of actors, including technology as an actor, within networks. For example, Walsham and Sahay (1999) present the case study of the GIS project we can observe conflicting interests between USAID and other actors, as well as the uneasy relationship that existed between the scientists and the public administrators at various institutions. This tension was evident when the GIS technology was inscribed with assumptions by Western developers about the purpose of maps and an expectation of coordination within the public sector that contradicted the institutionalized practices and norms in the Indian context. It is possible to explain why the GIS adoption in local districts was delayed in most of the local administration agencies and accepted in two others by taking into account the alignment and differences in interests.

The constructs of ANT do not enable the examination of why these mobilizations of actors occur or the origins of these networks. This research seeks to take into account the institutions that are the historical roots that condition perceptions and actions of people working with technology. This research's examination of agency requires constructs that examine the micro-level perceptions and actions of the ICT professionals and ANT is mainly used to describe the trajectory of the project as a whole and how actor network formation and stabilization processes occur.

The technology enactment framework has been selected for this research, since it enables the exploration of the constant process of e-government system implementation with a focus on the role of agency as a focal point in analysis, unlike the two theories presented so far. The introduction of Weick's (1979; 1995) perspective to the TEF is an elaboration of the construct of enacted technology privileging the actors and their experiences at work on the project. Similar to ANT and Structural Theory, the TEF can be used to explore the process of implementation in a way that takes into account both agency and structures (in ANT the global and local state actors are institutional structures), where both the macro and micro levels are taken into account. The TEF's construct of institutional arrangements in the context of the public sector takes into account the historical, social, political and economic structures that are unique to Dubai and the public sector and links them to the on-going sensemaking of local actors.

Finally, the TEF elaborates on what is meant by technology by depicting it as arriving as an objective technology that is enacted in the local context. This concept of enacted technology acknowledges that variations in the use of technology exist which has been well documented in studies of e-government in developing countries given the disparities in people's realities, history and social structures across contexts. This emphasis on enacted technology takes us beyond the success and failure dichotomy presented in stages of growth models. The TEF

lens presents e-government projects as performative and as an ongoing accomplishment by local actors. This comes in contrast to universal models that shape our framing of e-government and their outcomes according to linear and generalized criteria.

### ***Limitations of the TEF***

The TEF has been commended for synthesizing diverse theoretical concepts that are relevant in understanding ICTs implementation and use in the public sector into one framework. The TEF also reflects an action-centred institutional approach and this gives it strength in addressing the complexities of ICT implementation in the public sector (Yang 2003; Danziger 2004; Schellong 2007; Cordella & Iannacci 2010). The TEF has a number of limitations. One main limitation of the TEF is that it is abstract and too general to be practically employed in research. Another limitation is the framework's emphasis on institutional continuity more than institutional change and this is emphasized in the case studies presented in the book (Yang 2003).

A third limitation is that the examples provided in the book are narrowly focused on the US context and particularly at the federal level instead of the level of the local government (Yang 2003). Fourth, Fountain's (2001) work is criticized for presenting the TEF without adequately acknowledging significant studies in the area of ICT's in the public sector over the past few decade that present similar arguments (Norris 2003). According to Norris (2003) enactment theory presented by Fountain (2001) is nearly identical to the process of institutionalization of technology, which she does not discuss in her work and does not distinguish from her theory. Finally, the TEF does not offer enough details on the nature of objective and enacted technology, since the latter encompasses both the subjectively constructed technology and the artefact in its material form (Norris 2003; Yang 2003; Danziger 2004; Yildiz 2007; Cordella & Iannacci 2010).

### **3.3 Elaborating on the Construct of Enacted Technology with concepts of Sensemaking and Organizing**

In this section the construct of enacted technology is unpacked to show the micro-processes that it is comprised of by elaborating on sensemaking and organizing (Weick 1979; Weick 1995). The TEF is essentially a synthesis of theories of institutions and sensemaking and enactment. Fountain (2001) explicitly shows the role of sensemaking in the TEF when she states, “Now technology are enacted, made sense of, designed and used (when they are used) - through the mediation of existing organizational and institutional arrangements with their own internal logics and tendencies.” (p.12).

There are two justifications for unpacking the construct of enacted technology. First, the construct of enacted technology is packed with several ideas that need to be clarified. The construct refers to more than a subjectively constructed technology and includes a process that involves actions of perceiving, designing and implementing information systems that is very similar to Orlikowski’s (1992) concept of technology-in-practice. The emphasis on actions is illustrated when Fountain (2001) explains that enacted technology “consists of the perceptions of users as well as designs and uses in particular settings.” (p.10). In a review of Fountain’s (2001) work, Danziger (2004) explains that there is a need for the clarification of the construct of enacted technology, since it simultaneously refers to two things: the subjectively defined IT and the objective (material) IT artifacts that is being enacted.

Second, the TEF reveals the role of human agency yet does not include enough detail on the nature of this micro-process. As Danziger (2004) points out, the TEF invites reversing the direction of the causal arrow between technology and structure to see the embeddedness of government actors in cognitive, cultural, social, and institutional structures that influence the design, perceptions, and uses of the Internet and related IT. Fountain (2001) herself asserts



the role of agency when she states “individuals in institutions tend to enact new information systems to reproduce existing rules, routines, norms and power relations, if institutional rules are clear and there are no other salient alternative uses are visible in the environment.” (p.89). Therefore we elaborate on enacted technology through ideas of sensemaking and enactment (Weick 1979; Weick 1995) to see into these micro-processes of enacted technology, and the role of the ICT professionals’ actions that are taken in response to events that arise over the course of the project.

### ***An Overview of Sensemaking and Organizing***

The sensemaking process is neatly summarized in a recipe: How do I know what I did before I see what I said? (Weick 1979). In relation to other works on organizational theory, the sensemaking perspective emphasizes that the social construction of reality occurs through social interaction (Berger & Luckmann 1967). However, what differentiates this perspective is that other work emphasizes the discovery of patterns that are out there and then the negotiations that take place, whereas sensemaking views order as imposed. Sensemaking emphasizes that people actively engage in the world, putting things out there, often through talking, and these things are then retrospectively perceived. In the context of organizational life, one of the main ideas that the sensemaking perspective highlights is that organizational actors are part of a terrain that is open to multiple identifications and interpretations.

According to Weick (1995, p.461) there are seven properties that characterize sensemaking: an ongoing process with continuous flows, social context, the process involves extracting cues, knowing in retrospect, plausibility given that there are several possible identifications that could be made, identity in the setting, and enactment since action is a means to make sense and impose order. These seven properties can be understood as part of the sensemaking recipe presented earlier on. Actors are influenced by the social context,

personal identities and retrospect. The actors engage in the environment by extracting cues, from an ongoing flow of events that might change with time, and that there is the element of plausibility. The enactments only take place if an object is produced in the first place and then subsequently examined (Weick 1995, p.463). Given that the objective of this research is to explore the inter-subjective understandings and social constructions of these ICT professionals we need to take the sensemaking perspective further to explore how it addresses collectives and structure, this is best understood through ongoing process of organizing.

Organizing is defined as, the same recipe with plural nouns. How do we know what we did before we see what we said? (Weick 1979, p.47). Organizing resembles a grammar, code or set of recipes, so that the world that people confront includes raw materials that cognitive processes will elaborate or simplify in patterns for action. Organizing includes shared recipes for constructing, and also includes arranging processes to cope with the equivocal nature of streams of experience. Organizing is accomplished by processes of interlocked behaviour between two people, where the behaviour of one person is contingent on the behaviour of the other. These contingencies are called interacts (Weick 1979, p.89). In this case, person A takes an action and then person B responds, and then person A responds back, this complete sequence is called a double interact. It is useful to describe organizing in terms of double interacts as a unit of analysis (Weick 1979, p.89). The process that was described above is referred to as committed interpretation; when actions are public, irrevocable and volitional, this is a committing context, the action becomes bound to both parties and there is a search by both for justification (Weick 1995, p.14).

These small-scale micro behavioural commitments can potentially have macro consequences. Social relationships lead to being bound and this invokes social entities that justify actions that are taking place. It is through the reification of social commitments that

their expectations are set up (Weick 1995). These causal maps are also relevant to groups. As people try to make sense of things as a group they guide each other through agreements on which concepts capture these abstract experiences. Concerted action is possible when there is relevance between concepts of causal maps and a double interact (Weick 1995).

Organizing is like a *grammar* in the sense that it is a systematic account of some rules and conventions by which sets of interlocked behaviours that come together to form social processes that are comprehensible to actors. It is also a grammar in the sense that it consists of rules for forming variables and causal linkages into meaningful structures later called causal maps that summarize the recent experience of people who are organized. In this research, organizing is considered to be the process in which the ICT professionals engage in social interactions in response to equivocal situations, which generate alternative plausible stories of what is going on, and guided by shared understandings and cognitive schemas to reproduce patterns of behaviour. At times causal maps may be discredited and other alternative maps and interpretations from experiences are drawn upon. For the purposes of this research we take the ICT professionals to be engaged in an ongoing process of sensemaking and organizing as they engage with their environments and events, where their actions ‘implant’ things into the world that they inter-subjectively make sense of and retain to inform and guide future action.

### ***The Components of Sensemaking and Organizing***

The sensemaking and organizing process is comprised of four components: ecological change, enactment, selection and retention (Weick 1979, p.130). Ecological change refers to the discontinuities or differences in the flow of experiences that call for attention to resolve equivocal situations. These ecological changes provide the raw materials for enactment in addition to retained experiences of enactments. The point is that people notice things when

there is change and not when experiences run smoothly. Enactment refers to actions taken by actors in response to ecological change.

The second component is selection that refers to imposing causal maps, based on past experiences and interpretations, in response to enacted equivocal situations. Often selection draws upon previous enactments and interpretations of causal sequences that worked. Equivocalities are filtered through previous enactments, labeled as familiar or strange, in comparison to past enactments and interpretations. In some cases selection may discredit enacted environments and attention is directed to other aspects that have been retained and stored. The third component is retention, which basically refers to the process of storing successful sensemaking outputs. These outputs are the enacted environments and causal maps that actors draw upon in selection processes.

In this research, we take enactment to be the direct engagement with the flow of experiences in the form of actions to impose order that result in ecological change. Therefore, the actions of the ICT professionals during the implementation process are in response to events of discontinuities and equivocal situations are considered as enactments. The selection process refers to how the ICT professionals' equivocal enactments are understood through retained experiences and scripts that are used to inform actions. We also take these enacted environments to be subject to being discredited in certain times by the ICT professionals when other alternative justifications to actions are more salient in that situation.

Brown *et. al* (2008) adopts the sensemaking perspective to analyze the process of developing a computer game for mobile phones by a small IT company in Singapore. The process of developing the game involves shared stories of what happened that varied as actors told stories of themselves and of others on the project. The findings suggest that routines and work practices are shaped by narratives, which varied due to the influence of

impression management, attribution egotism and institutional constraints in sharing some details of what happened.

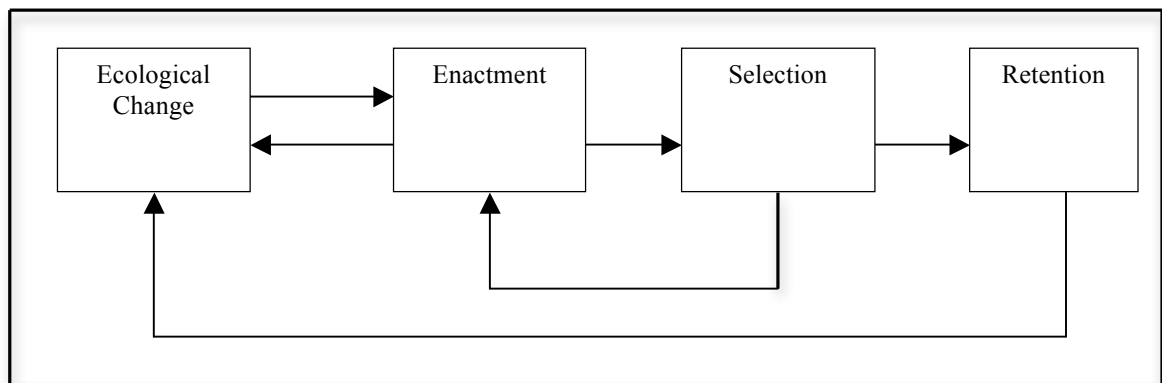
Similarly, Jensen *et. al* (2009) employed the theoretical concept of sensemaking in a study that focuses on an Electronic Patient Records (EPR) system's deployment in the health sector. The case study reveals that the doctors were active players in the implementation process as they accepted some aspects of the system and rejected others. For example, the ERP was at time seen as a control mechanism that challenged their autonomy and clinical freedom. In another study by Shoib and Nandhakumar (2003) the sensemaking perspective is employed to examine the process of IS implementation with multinational companies in the context of the US and Egypt. Sensemaking is shaped in some ways by national context, as well as other aspects of context such as view of rational and irrational ways of working, views of planned and situated ways of working.

### ***The Concept of Enactment in this Research***

It is worth noting that the concept of enactment as part of sensemaking is a micro-level activity that comes to constitute the construct of enacted technology in the TEF. According to Weick (1979; 1995), the concept of enactment is a micro-level activity that is part of sensemaking and can take two forms. The first form is when actors isolate certain aspects of change for close inspection; enactment here is in the form of bracketing. The second form involves an actor taking actions that leads to ecological change that constrains and shape further action. These two forms of enactment that are implied in Weick's (1979; 1995), work have been discussed by Jennings and Greenwood (2003) that criticize Weick for the lack of details on what constitutes action. Thought can be considered as action in the form of bracketing. It also seems that different types of action are possible, from direct, individual action on an object to indirect, social interaction among the subjects themselves. This research seeks to explore sensemaking and enactment that directly influence the environment and objects.

These sensemaking and enactment micro-level activities as explained by Weick (1979; 1995), come to constitute the enacted technology construct in the TEF. In other words, the ways in which the ICT professionals encounter ambiguous events and take actions in response as they work on the project comes to shapes the overall design and implementation of the e-government system and the way it is enacted. Therefore, the enacted e-government system encompasses both the micro-level processes of sensemaking as well as the subjectively constructed system.

Figure 3.2 The Relationship between Enactment- Selection and Retention



*Source: Adapted from Weick (1979 p. 132)*

### **3.4 Elaborating on the Construct of Institutional Arrangements**

In this section, the construct of institutional arrangements as depicted in the TEF is unpacked by elaborating on the nature of institutions and their dynamics using concepts from Scott's (2001) work on institutional theory. There are two justifications for elaborating on this construct. First, the TEF and its application in the case studies of Fountain's (2001) book emphasize institutional continuity and the recalcitrance of technology enactment to change due to the embeddedness of actors in institutional arrangements more than showing change (Yang 2003; Cordella 2007; Yildiz 2007). For this reason the concept of institutional pillars (Scott 2001) is introduced to show institutional influences and dynamics that contribute to change in the public sector. Second, this research is based on the assumption that new institutional elements arrive into the public sector with e-government projects that are not part of existing institutional arrangements, and that is why the concept of institutional carriers is discussed.

It is worth exploring how others conceptualize institutions at this point. DiMaggio and Powell (1991) explain that conceptualizations of institutions vary from one domain to the next, and in the emphasis they place on micro and macro aspects, normative and cognitive elements, and the role of interests and relation networks in the diffusion of institutions. In their discussion of old and new institutionalism, they explain that new institutionalism 'emphasizes the ways in which action is structured and order is made possible by shared systems of rules that both constrain the inclination and capacity of actors to optimize as well as privilege some groups whose interests are secured by prevailing rewards and sanctions' (DiMaggio & Powell 1991, p.11). One of the most influential authors in the field of institutional studies is Richard Scott, author of the book: *Organizations and Institutions*. In his book, Scott (2001) acknowledges the role of the micro level and cultural and cognitive dimension of institutions. Scott (2001) neatly sums up what an institution is through a list of

five properties of institutions: they are social structures that have attained a high degree of resilience, they are comprised of cognitive-cultural, normative and regulative elements along with resources and activities that give stability and meaning to social life. These institutions are transmitted via various types of carriers, they operate in multiple levels of jurisdiction, and they connote stability but are subject to change processes as well.

### ***Institutional Pillars***

Scott's (2001) concept of institutional pillars is linked to the TEF's construct of institutional arrangements where the regulative pillar corresponds to legal structures, the normative pillar corresponds to socio-cultural structures and the cultural and cognitive pillar corresponds to the cognitive structures. The value added in unpacking institutional arrangements and discussing institutional pillars is based on Scott's (2001) argument. Scott (2001) suggests it is beneficial to draw out the distinctions of conceptions that constitute institutions rather than offer an integrated one, focusing on distinct, yet interdependent institutional pillars to highlights their mechanisms at work. This offers a lens to explore institutional influences in a more nuanced way.

Scott (2001) elaborates on the influence of each of these three pillars. The regulative dimension of institutions is one of the most discussed elements of institutions that take the form of regulations or laws that guide organizational action and perspectives. This pillar involves setting rules and monitoring to ensure conformance, using coercion or threat of legal sanctions to shape future behaviour. Some academics point out that there are normative and cognitive elements to laws. Laws are at times ambiguous and do not provide sufficient prescriptions for conduct. This requires sensemaking, which requires more normative and cultural cognitive elements than coercive ones for its effects.



Other studies conceptualize institutions as normative influences that include prescriptive and obligatory dimensions. These systems rely on values (are the conceptions of the desirable linked to standards that behavior is assessed by) and norms (what is considered to be the legitimate way to reach ends). Some norms are applicable to the collective whereas others are to a subgroup, which gives rise to roles – particular roles and goals for particular positions. Roles can be set up formally in an organization, or informally through interaction and expectations that guide action. The stabilizing effect of norms are both internalized and imposed by others.

The concept of institutional pillars is also useful since it depicts dynamics between different institutions that contribute to institutional change. As Hoffman (1999) explains, the value of the concept of institutional pillars is to see them as interacting with each other rather than viewed as being independent to capture dynamics. In recent years, the concept of interacting institutional pillars has been employed in several studies of organizations and healthcare. These studies focus on institutional change and environmental protection (Child *et al.* 2007) institutional corruption (Li *et al.* 2007) and institutional changes in the US healthcare industry (Caronna 2004).

Child *et al.*'s (2007) study of environmental protection shows particular patterns of institutional change in China that are compared to the patterns in the United States. The findings suggest that in China the State is the institutional entrepreneur when they respond to events and sets up a regulatory system to legitimize environmental protectionism. This is then subsequently followed by efforts to instantiate normative and cognitive-cultural systems so that environmental protectionism moves from the domain of science to serve the development of social responsibility. On the other hand the USA case shows the role of NGOs in shaping public opinion leading to a normative consensus on environmental issues that is subsequently developed further by state policies and this involves the setup of

regulatory systems. The authors use Greenwood *et. al's* (2002) framework of institutional change. The model shows environmental jolts that contribute to deinstitutionalization and then eventually re-institutionalization. The framework illustrates the trajectory of institutional change as the issue of environmental protection moves from being legitimized through regulative pillars towards normative and cognitive-cultural pillars.

Li *et. al's* (2007) also compares the institutional changes that occur in two contexts to combat institutional corruption. The comparative study of Honk Kong and Singapore shows how institutional pillars interact in different ways within each of these contexts to provide legitimacy to social institutions to deal with institutional corruption. Hong Kong and Singapore differ in their institutional pillars. For example, the regulatory systems differ in Honk Kong involves parliamentary interventions to policies. Also, the cultural-cognitive pillar and the normative pillar in Hong Kong differ from those in Singapore in that the media criticizes the government's actions. They are based on more western ideals such as democracy. The authors' findings suggest that there still needs to be regulative interventions to support normative systems of the state.

The concept of institutional pillars is also adopted to examine the institutionalization of healthcare policies. Caronna (2004) presents the study of the US health sector and focuses on the interaction of institutional pillars. The study shows an emergent process of alignment and misalignment between pillars during three historical eras of healthcare in the USA. Caronna (2004) explains that in the early years the professionalism of physicians dominated, and with the arrival of Medicare there was an alignment between the regulative pillars of policies and the doctors' belief and normative expectations, in the need for better services. As managed care models appeared over the years, doctors were expected to reinterpret their roles and practices so that they ensure efficiency and cost effectiveness instead of quality.

Caronna (2004) argues that at one point there was a need to align the existing normative pillar with the cultural and cognitive pillar and the regulative pillar that were in place for Medicare. During this time, professional socialization of doctors changed and was increasingly being shaped by management logics, and thus, the institutional environment knocked down the professional dominance in the earlier era. The author argues that the period of transition depicted does not suggest that the normative pillar had changed; rather, it is the field that shifted. However, even if cognitive-cultural and regulative pillars legitimize the managerial models, we find that professional dominance is not entirely dismissed. In summary, changes in healthcare will not be accepted if the normative pillar does not evolve with these new logics. The study by Caronna (2004) is very relevant to the study of e-government projects that introduce new ideas through regulations that are complied to, yet they do not access the cognitive and normative dimensions of the public sector that are deeply rooted there.

### ***Institutional Carriers***

The construct of institutional arrangements in the TEF is enriched with notions of institutional carriers (Scott 2001) that take into account the arrival of new ideas into the public sector. Technology enactment is a process that is embedded in institutional arrangements that incorporate various institutional carriers that brings institutional elements into the organization. This is relevant in the context of e-government and illustrated in a study by Heeks (2005) that describes e-government systems as carriers of particular contexts. Thus, the actors have a role in inscribing these technologies with certain values. As a result there is a mismatch between the e-government system and the context it is deployed in, though in some cases accommodation takes place.

According to Scott (2001; 2003) institutional elements (or ideas) travel via different vehicles or carriers and are identified as symbolic systems, relational systems, routines and artifacts

Symbolic systems refer to symbolic schemata that are part of a wider environment in the form of rules, laws, mandates and policies. These symbolic schemes are also carried in the minds of people as widely held beliefs, which include expectations, values and categories.

Scott (2001; 2003) explains that institutional carriers can also take the form of relational systems, which are inter-organizational and inter-relational linkages such as networks of position and roles. The relational system also refers to governance systems such as different positions within an organizational structure. Some typifications include cognitive ones such as codified roles and positions. The relational systems may also be embodied in structural isomorphism such as similar organizational structures across different contexts. Relational systems can also be seen as normative authority systems. Routines or structured activities in the form of habitualized behavior may also embed institutions. These routines are the basis for reliability of performance and rigidity of organizations. They include standard operating procedures to organizational activities such as assembly lines. They may also be soft such as organizational routines or hard, which means they are embedded in technology.

Artifacts may also be carriers of institutions. This is in line with the work of academics that stress the social construction of technology through situational factors and interpretation processes (Bijker *et al.* 1989; Orlikowski & Barley 2001; Orlikowski 2008). Artifacts as carriers can be seen as affected by the three institutional pillars. One is the regulative pillar such as a mandate by authorities for the construction of technology to ensure safety, for example. They also conform to normative processes such as trade associations or professional bodies that set standards. They may also embody a set of ideas, and it is this symbolic aspect that may carry more significance than the material aspects of technology (Fountain 2001; Scott 2001). The concept of institutional carriers is illustrated in Rowland's (2008) work that presents the case of system development methodology and how the developers and the clients enact it. The process of development was shaped by structural

influences. As Rowland's (2008) points out, the system development methodology is a carrier of institutions that preserves rules and resists change. For example the procedures of signing off suggest that there is a power relationship between the client and the developer.

### ***Institutions as Scripts***

As depicted in the E-S-R model in Figure 3.1, sensemaking and organizing processes are comprised of enactment, selection and retention. Here we elaborate on the process of selection by presenting situational scripts as resources that are drawn upon by actors as they encounter uncertain events. Scripts refer to "socially mediated construction of a common framework of meaning" (Scott 2001, p.58), and as routines that are taken for granted and which constitute cultural and cognitive systems. The drawing of scripts shows a link between institutions and sensemaking and organizing processes, given that these situational scripts are institutionalized typifications for actions that are drawn upon (Weber & Glynn 2006).

In the field of information systems there have often been studies of frames in shaping actions during the implementation and use of technology (Orlikowski & Gash 1992; Azad & Faraj 2008). Barley and Tolbert (1997) refer to scripts as patterns of behaviour that are repetitive and regulated. Scripts have been described as outcomes of habitualized and objectivated typifications (Berger & Luckmann 1967) or as shaped by wider institutional frameworks (DiMaggio & Powell 1991; Scott 2001).

The theme of institutions and scripts is explained in Barley and Tolbert's (1997) work on institutional theory and Structuration Theory, a model of institutionalization is presented that shows how institutions are encoded into scripts that are then enacted, that lead to replicating or revising institutions over time. The authors relate scripts to Barley's (1986) case study of CT scanners in radiology labs. The authors present the example of technicians working with

the CT scanners, who ask radiologists questions, by drawing upon the script of Direction Seeking that embodies the institution of medical dominance. Barley and Tolbert (1997) show the link between scripts and institutions in this example, where drawing on the script and the subsequent enactments by the technicians contributes to reinforcing the radiologist's role as the medical expert.

In this research, the focus is on how scripts inform action during sensemaking and organizing processes and we employ Weber and Glynn (2006) ideas of situational scripts. The authors present institutions as constellations of typified actors, typified situations and typified expectations of performance and conduct. They introduce the notion of frames so that these concepts become situational actors and situational scripts. The authors combine ideas of institutional typifications and the situational, to allow the sensemaking perspective to retain its focus on situations, yet also to encompass institutional influences.

Weber and Glynn (2006) consider sensemaking as taking place within institutions. The authors present three mechanisms in which institutions affect sensemaking. First, institutions may “prime” sensemaking through the provision of social cues that informs which norm to follow. Actors are primed by the situation as other actors behave in the same way. Second, institutions may “edit” sensemaking as people encounter unmet expectations of other people's conduct and then they retrospectively edit actions and meanings. In such cases actions are linked to pragmatic concerns and social cues. Third, institutions can “trigger” sensemaking as they create puzzles due to gaps of contradictions in institutions.

For the purposes of this research, local socio-cultural norms and beliefs and formal legal institutions act as triggers for sensemaking activities of the ICT professionals as they present ecological changes that are to be responded to. These institutions also are part of the enacted environments that are retained in the form of situational scripts and roles that are accessed

by the ICT professionals during the project to inform enactments. The drawing upon these scripts is driven by these three mechanisms of priming, editing and triggering of sensemaking processes.

### **3.5 The Interplay of Structure and Action in the TEF**

Fountain (2001) explains that the interplay between institutions and actions is important and contributes to institutional change. She states, “It is erroneous to attribute structural change directly to technology. Organizational network, and institutional arrangements - and the embeddedness of behavior in them – play key roles in technology enactment.” (p. 96) It is worth noting that there are some challenges in the employment of the TEF as a theoretical concept for analyzing research data since it incorporates both the sensemaking and enactment theory and institutional theory. Jennings and Greenwood (2003) show commonalities and overlaps in the concept of enactment as part of sensemaking and new institutional theory, as well as some differences that make it challenging to combine the two perspectives completely.

First, the former is inherently inter-organizational and inter-subjective, whereas the other is inherently intra-organizational and the intra-subjective. Second, both sensemaking and institutional theory are nonlinear perspectives but include different dynamics. The sensemaking and enactment perspective is nonlinear and includes immediate feedback loops and there are points of discrete states or choice points. Institutional theory is also nonlinear as a result of institutional pressures and this shapes the institutionalization process, with feedback loops that are considered to take place over a long period of time. Third, the sensemaking theory sees events as equivocal whereas institutional theory views events as discrete within a larger stream of events (Jennings & Greenwood 2003).

Fourth, there is a difference in the mechanisms at work. In the sensemaking theory, the cycle contains most of its major theoretical elements explicitly as part of the process of sensemaking (shock/action, recognition, selection, retention, adjustment). In institutional theory, there are underlying mechanisms that shape processes of institutionalization (the



three forces of isomorphism, culture, values, and exogenous shocks). According to Jennings and Greenwood (2003), Professor Weick has acknowledged that the sensemaking theory has yet to develop a sophisticated grammar to elaborate on processes that are taking place, while new institutional theory has its own set of structural terms for framing and constituting enactment (power, negotiation, network interaction, diffusion). Therefore, the TEF's synthesis of sensemaking, enactment and institutional theories complement this lack of sophisticated grammar.

Even with all of these differences, we find Weick *et. al* (2005) discusses the significant relationship between institutions and sensemaking and the potential for combining these concepts. The authors explain that institutionalists often argue that what is missing in the sensemaking perspective is the process of socialization and indoctrination of actors by institutional forces. Weick *et. al* (2005) suggest that the sensemaking perspective's contribution is that it provides a micro-level mechanisms of social interactions that lead to the creation of the taken for granted (Scott 2001; Weick et al. 2005).

Similarly Weber and Glynn (2006) have pointed to the potential of combining the two perspectives where they argue that most studies portray sensemaking as bottom up aggregation mechanisms, which are constrained by institutions. Weber and Glynn (2006), present a model and taxonomy to illustrates top-down mechanisms where institutional structures contribute in shaping sensemaking since they act as the 'substance for' sensemaking activities. The authors' argument is based on the conceptualization of institutions as structures that are comprised of classifications (Berger & Luckmann 1967), and this represents a constellation of institutionalized frames, identities and actions which actors draw from to take action.

The combination of the concept of sensemaking and institutional theory is evident in a number of studies from the fields of information systems and organization studies (Weber & Glynn 2006; Jensen et al. 2009; Coleman et al. 2010; Morrison 2010). In these studies, situated actions are seen to reconstruct macro states. For example, Jensen *et. al* (2009) present a study on the implementation of an EPR system in the health sector. The study shows the influence of changes in the institutional environment on outcomes. The rational myth of an efficient EPR system was introduced as an institutional logic, which competed with other institutional logics (cost effectiveness and efficiency versus professionalism and autonomy). The physicians experienced these logics and multiple meanings attributed to the systems. Their actions were influenced by these meaning of the EPR as a control mechanism that challenged their autonomy and clinical freedom. As a result they would disassociate themselves with to the system.

Coleman *et. al* (2010) also employ these theories in the study of healthcare organizations. They explore the ways in which loosely specified policies are made sense of and enacted depending on the health institutions' history. At the micro level, there were locally developed discourses and frames of reference that shaped the services. The sensemaking in hospitals was influenced by changes such as the introduction of new policies and reorganizations. The actors also drew upon existing institutions such as norms, existing policies and histories. For example, there was a difference in sensemaking and actions depending on experiences of working within a fund-holding organization or not. The authors conclude that the more projects to reorganize the health sector are introduced, the more likely that schemata are shaped in ways that make organizing a matter of practice and does not really lead to significant change.

A third study that employs these ideas is Morrison's (2010) work on international policy implementation in developing countries. The author argues that international policies are

made sense of at a local level by examining the macro structure, such as history, culture, and other organizational level aspects. This study suggests that in program environments there is a high degree of cognitive dissonance due to historical factors. She explains that international development mandates tend to create additional cultural and organizational blockages. At the same time micro level interactions can significantly influence the ability of local staff to overcome strong cognitive challenges.

### **3.6 Global Influences and the TEF: Formats for E-government**

The TEF in its original form emphasizes the influence of existing institutional arrangements on perceptions and actions of public sector staff that work on and use ICTs. However, in this study there is a need to consider the influence of new institutional elements that arrive with the e-government project. These institutional elements arrive from beyond the local or national context and come as a bundle of interlinked technologies, techniques and experiences.

In this section, the TEF is extended to include the concept of global formats (Sassen 2006a; Sassen 2006c). Sassen's (2006a; 2006c) concept is a useful and innovative conceptualization that provides a language and a conceptual tool to describe and explore how packages of technology, norms and practices are developed and semi-configured as part of a global discourse, and then dispatched or carried into organizations in specific local or sectoral settings. In the context of these new host organizations these packages are shaped through the enactments and sensemaking of local actors. The theoretical proposition of formats follows, to a large extent, the institutional perspective adopted in Fountain's (2001) technology enactment framework, which depicts how actors develop and use ICTs in ways that are influenced by institutional arrangements.

#### ***An Overview of Formats***

Sassen (2006a; 2006c) introduces the concept of formats in the context of a study of civil society organizations (CSO's) that have adopted ICTs that trace their origins back to business models in large private companies – for example in management accounting. She describes how the adoption of ICTs within CSO's involved the introduction of both new political and economic formats that come to shape work practices but are also shaped in this new context. Based on Sassen's (2006a; 2006c) work, formats are understood as social,

conceptual and material structures of information handling and use that are deployed to various national contexts and public sector domains.

The concept of formats is used in this research to help us study the implementation of e-government systems. The formats for e-government include elements such as international best practices and artefacts such as development frameworks, public portals and online forms. They are understood as packages of mixed elements that have been semi-configured by global actors and are then transferred through certain carriers such as management consultants, international organizations and education and training structures into public sector organizations.

The term format is used to connote a planned arrangement or layout (Oxford Dictionary). The idea of a format as *a planned arrangement* coincides with Sassen's (2006a; 2006c) conceptualization of format. According to Sassen (2006c) a format represents a semi-configured arrangement of institutional norms, modes of organizing and technology. Sassen (2006c) identifies these three elements when she states that a format "... is precisely at the intersection of the technology and the organizational forms and norms".

The semi-configured nature of formats is illustrated in Sassen's (2006a) study of civil society organizations that have adopted ICTs in their operations, where she explains "... and our conclusion is the need [for CSOs] to exert economic and political formats in order that they can reinvent themselves as networked platforms". The idea of exerting or imposing new formats on organizations in order to effect a transformation (e.g. to become a 'networked platform') highlights the slightly de-centred but still key role of global actors in constructing and transmitting these formats into different contexts.

Of course, we find that there are both new and existing formats present in any social system at the same time – such tensions being essential to any active organisation. This is clear

when Sassen (2006a; 2006c) asserts, “... some formats already exist and are problematic”. When Sassen (2006a; 2006c) argues that there is “...the need to exert economic and political formats” she suggests that more than one format may be exerted at the same time in order to compete with or even replace existing problematic ones.

The concept of formats has been proposed as a way to explore organizations and their interactions with ICTs. Sassen’s (2006a; 2006b) work focuses on formats that are constructed around ICTs or to a large degree embedded in them. The formats lens may be used to explore a range of ICT-related areas, like electronic and knowledge spaces, for instance. The aim in this thesis is to apply it as a lens to understand the organization, which according to Sassen (2006a; 2006c) is one of the concept’s most powerful applications. Specifically, Sassen (2006a; 2006c) uses formats as a conceptual lens to understand how technical properties that are inscribed into technological artefacts are translated into something else once applied in the context of use. The format lens focuses on a process of appropriation, which may lead to emergent ways of working in the local context. This is evident when Sassen (2006b) explains, “Less noticed is the fact that these technologies themselves evince unstable meanings as they migrate between contexts, and get assembled and re-assembled into diverse formations.”

### ***The Components of a Format***

As noted earlier, formats consist of three basic elements: modes of organizing, institutional norms and technology. Table 3.1 is a conceptual scheme of these basic elements with examples of these elements in the context of e-government projects.

One of the basic elements of a format is the *mode of organizing*. All social systems exhibit some form of organization or another, with the presence of certain practices, roles, rules and structural arrangements. For example in the case of government the best-known model is

that of the bureaucracy. Such modes are linked to the overarching formats in place. As Latham and Sassen (2005) explain, organizations follow some form of hierarchy or structure that is perceived as static and is historically contingent and nested in other hierarchies (2005). Other modes of organizing as part of e-government formats include linear stages of growth models and the idea of 'best practices' for dealing with clients, ICT implementation strategies, and means for evaluation of e-government projects.

Latham and Sassen (2005, p.23) also discuss how "digital networks strengthen the multi-scalar character of many social processes, particularly processes that do not fit into nested hierarchies". This illustrates how technologies that are part of a new format may destabilize older hierarchies as a process of rescaling occurs and newer actors and practices are introduced, which the authors (2005, p.22) describe in the context of CSO as "...a variety of non-state actors and forms of cross-border cooperation and conflict – global business networks, the new cosmopolitanism, NGOs, Diaspora networks, and trans-boundary public spheres". Similarly for e-government we might identify as rescaling elements international management consultancies, outsourcing contractors, NGO's and advocacy groups, global business interests and social media.

For example, during the introduction of networked technologies in financial markets ICTs gave financial centres a multi-scalar character with newer hierarchies of scale emerging and running along older, nested ones (Latham & Sassen 2005). For instance, in a rescaling of local activities such as share trading, the financial centres become articulated into the global realm. Another example is how different localities can be simultaneously experiencing the same things, which authors Latham and Sassen (2005) refer to as "a horizontal global scale" (p. 23).

As discussed by Sassen (2006a), many organizations including government departments are embedded within settings that are comprised of supranational elements, hierarchies of scale and neo-liberal corporate contexts. This parallels ideas on e-government (particularly in developing countries) that emphasize the role of disembedded and global institutions such as the United Nations agencies and ideas of New Public Management (Avgerou 2002). The former makes up a political format where ICTs are used as instruments to improve transparency and contribute to democracy. The latter is part of an economic format where public sector organizations use technology to be more efficient business-like and customer-centric in approach to citizens. Sassen (2006a) discusses both of these political and economic formats in her work on CSOs.

This process of rescaling is not only confined to transactions being undertaken at a global level, where Latham and Sassen (2005) refer to global vertical integration and global horizontal integration (Sassen 2002; Latham & Sassen 2005). It also reflects a certain style of global politics and institutions that become articulated into the local setting, and at the same time local activities coming to constitute and reinforce these global institutions.

A second element of a format is the *institutional norms*. For example, new formats that are introduced into organizations may carry with them institutional norms that are part of the disembedded institutions (Avgerou 2002), and this may do not fall under a particular jurisdiction. For example, there are many studies that adopt an institutional lens to examine why public sector employees behave in a certain way as they interact with technology (Walsham & Sahay 1999; Avgerou 2002; Madon *et al.* 2004). These studies all emphasize that institutional structures contribute to diversity in the interpretation, use and design of technology, with consequences for related organizational changes (Avgerou 2002). One influential institution that is often identified as regenerating such norms is new public management (NPM) (Chadwick & May 2003; Dunleavy *et al.* 2006). In the case of e-



government projects, NPM may be used to account for norms introduced such as customer-orientation and a concept of economic value, both of which trace their origins to the private sector.

The behaviour of actors in a local context is thus informed by wider institutional influences that lie beyond the organizational boundaries. For instance, Sassen (2006b) refers to these institutional influences when she says that “Prominent among the settings within which CSO’s function today are neoliberal corporate contexts, supranational organizations, and normative orders dominated by older legitimacies, such as human rights politics and nation-based citizenship [...] The fact that these are the settings within which CSO’s tend to function introduces a variety of formats (demands for accountability adjustment to institutional dynamics which precede today’s ICTs, and so on) that do not align with the properties of networked communication technologies”.

Finally, at the centre of these formats is the element of *technology*. Examples of this in e-government projects include work-supporting software, the code, online applications and the technical infrastructures, and all the management and development techniques that accompany them. Fundamental to the concept of formats is that ICTs will be enacted and shaped through use, but this will be informed by the full contents of the semi-configured package. For example, Sassen (2006a; 2006c) describes technology as subject to mutation once applied in the context of use where she states that “...technology is mutant and indeterminate and its potential is *performative* if other variety of variables are there” (our emphasis). This emphasizes how overarching formats shape the process of technology interpretation, use and design. And this is where Sassen (2006a) sets forth one of her main arguments, that formats are (to some significant degree) re-configurable, allowing a balance between broader format and narrower technology. They are reconfigured in an attempt to create results that satisfy the stakeholders involved.

Another aspect to consider is that the introduction of formats involves the development of newer organizational tools and instrument. As organizations are reformatted there is a need to use new tools such as financial instruments. This is illustrated when Sassen (2006a) explains “new formats require inventing new organizational tools, including, at the limit, legal and accounting instruments.” This is illustrated in the case study of CSO’s that have adopted financial tools to demonstrate their efficiency to funding bodies, where the format in place requires them to work like the private sector.

As noted in Table 3.1, formats are malleable and shaped through several processes as they are designed and then enacted in the organizational contexts. They are semi-configured at the macro level by global actors and national institutions. They are then appropriated within local organizational contexts.

### ***The Macro Level Semi-Configuration of Formats***

One of the strongest themes that Sassen (2006a) sets forth is that formats are subject to rational development and design. The configuring and reconfiguring of formats involves the role of agency in introducing institutional norms, modes of organizations and technology into public sector organizations. The idea of agency shaping the formats in place presents a new angle to the study of e-government. Most studies justify the reasons for the differences in outcomes, either by focusing on institutional structures, or on agency that is enacting technology at the local level. The work of Fountain (2001), which discusses the relationship between both, had not delved into the idea of these elements being subject to reconfiguring.

The formats for e-government are semi-configured by global actors. Strang and Meyer (1993) explain that institutional conditions diffuse as a result of theorization of actors and practices. The idea of global theorization of global models involves the development of discourses and the mobilization of resources. Theorization at a global level is a more

observable and distinct process than the process of local inter-subjective ‘theorization’ of institutions where they are internalized within the local (Strang & Meyer 1993). The convergence (in the content) of the discourse on e-government in the international community – i.e. management consultancies and international organizations, such as the UN and the World Bank, is indicative of this process. At both the international and regional levels powerful institutional actors are able to semi-configure e-government formats that are deemed as appropriate and legitimate to adopt in various contexts to attain a specific set of outcomes. The semi-configuration of formats is not only expressed in the specification of what kind of technology to adopt and how, but also in how to frame ways of working, and what constitutes success and failure and evaluative practices.

Sassen’s (2006a) idea of formats clearly shows the role of formal institutions in designing them. Sassen’s (2006a) case study on CSO’s highlights rules and standards that are being set by international organizations and funding bodies. These regulative mechanisms are forcing these organizations to do two things: demonstrate their economic performance and democratize ways of operating through networked communication technologies. This is illustrated by Sassen (2006a) when she states “...civil society organizations are being pushed into a format that is akin to your average corporation, whether profit or non-profit, they are subjected to all kinds of criteria that come from one end from liberal democracies and on the other from these new rules of accountancy, transparency and accountability.”

Thus, these formats are subject to rational development by global actors such as international organizations or management consultancies. This trend is evident with e-government initiatives, which often involve a group of actors that rationally design formal institutions like rules and legislation. They also introduce ways of operating and outline what technology that is adopted and used. For example, they play a role in determining

whether the format for e-government is based on an existing legacy system or a new infrastructure.

### ***The Micro Level Appropriation of Formats***

The idea that the actions of staff and managers in the public sector shaping and reproducing global institutions has not been discussed extensively in e-government. Sassen (2006a) manages to depict the local as constituting and reproducing global institutions. Another contribution is that agency is seen to shape the format that public sector organizations follow with the aim of reaching a better set of results from the implementation of technology. Sassen (2006a) discusses how formats are subject to both a process of rational configuration and a process of emergence. As a theoretical lens, formats enables us to explore how new ways of working and organizing emerge by taking into account the ways in which members of public sector organizations interact with the technology, practices and norms that arrive from other contexts and enact them. This is relevant to Sassen's (2006a) discussion of imbrications between the digital and the non-digital.

These formats are also shaped in the local contexts as people encounter them and make sense of them. Many academics illustrate how the actors within a given context interpret and use technology in a given way that leads to a context-specific set of changes (Margetts 1991; Heeks 2005; Azad & Faraj 2008). For instance, Heeks (2005) explains how systems for e-government are inscribed with assumptions based on designers' perceptions. He argues that in developing countries there is often a mismatch between the values inscribed into a technology and the context in which it is used.

Another example is Margetts and Dunleavy's (2002) work on e-government which focuses public sector employees' perceptions of technology, which they refer to as myths. These studies place emphasis on how actors interpret and interact with ICT's and this can be linked

to Sassen's (2006a) notion of social logics that shape how actors make sense of and enact technology. Formats that are centered on ICT's introduce new institutional norms and modes of organizing (such as new practices or hierarchies of scale). These changes shape social logics of users who interact with the technology, and thus the dynamics shape the technology and the formats through their actions.

### ***Appropriated Formats***

Finally, it is time to consider the implications of the ongoing institutionalization of the e-government format. So far we have shown that the process of the semi-configuration of formats takes place at both the global and local levels. The e-government formats may eventually become appropriated as local actors interact with their various elements. Over time, they may even become sedimented, invisible, taken for granted and may even lose their coherence as a package and that means they are subject to being broken up. For example, the e-government project in Jordan (Ciborra & Navarra 2005) suggests that the new e-government format works in parallel with old mindsets and old legacy systems. The study shows that the older format for back office automation was broken down, and its technical component in the form of legacy systems became incorporated in the e-government format.

Over time a format may become layered on sedimented formats in the public sector, and it will incorporate elements of the old and the new. We also find that the e-government format may include in this way, a hybrid between formalized and rational bureaucratic procedures (the essence of prior formats of computerization of back office operations or past managerial oriented initiatives) and local socio-cultural norms that emphasize aspects such as the role of patron and client relationships, interpersonal relationships, and the importance of work and life balance.

The process of enacting e-government formats carries implications for the actors at the local level as well. It was through this process of sensemaking and organizing of the e-government format that the actors defined themselves, which in turn supported their social inclusion (Sennett 1998) through building of interpersonal relationships. Indeed, the sense of identity, understanding of priorities and support of social inclusion that an existing format gives, has helped promote its legitimacy in the eyes of organizational actors.

Table 3.1      The Basic Elements of Formats

The E-government Format	Examples
<b>Basic Elements</b>	<p><b>Modes of Organizing</b></p> <ul style="list-style-type: none"> <li>• Stages of growth models</li> <li>• Presentations on project management</li> <li>• Job descriptions</li> <li>• New organizational structure</li> </ul> <p><b>Norms</b></p> <ul style="list-style-type: none"> <li>• Managerial rationale</li> <li>• Project norms</li> <li>• Technological determinism</li> </ul> <p><b>Technology</b></p> <ul style="list-style-type: none"> <li>• Technical infrastructure</li> <li>• Coding Template and Checklist</li> <li>• Web portal</li> <li>• Support tools</li> </ul>
<b>Process of Mediation</b>	<ul style="list-style-type: none"> <li>• Semi-configuration by global actors and change agents</li> <li>• Local dynamics in organizations of enactments, sensemaking and organizing shape formats</li> <li>• The eventual working out of formats results as close alignment of institutional pillars occurs</li> </ul>

### **3.7 Summary and Conclusions**

This chapter introduced the theoretical framework employed in this research study. The theoretical framework employed here is the technology enactment framework (TEF). Two of the TEF's constructs of enacted technology and institutional arrangements are elaborated on using concepts of sense making and enactment and institutions. These concepts are all constituent theories of the TEF that Fountain (2001) discusses in her book, they are elaborated on to define and detail their constructs so that they are employed in the analysis of data in Chapter Six. The TEF is extended using the concept of formats (Sassen 2006).

The technology enactment framework is at the forefront since it presents an overarching view of how technology is developed and used in the public sector. The section began with an overview of the components of the framework and they are: institutional arrangements, organizational forms and this includes bureaucracy and networks, objective technology, enacted technology and outcomes. One of the key points that the TEF makes is the distinction that exists between objective technology and enacted technology. Objective technology refers to the material technological artifacts and their functions. Enacted technology refers to the socially constructed meanings of technology and perceptions people have of them as they develop and use them in the public sector.

The chapter then shifted to elaborate on two of the TEF's constructs: enacted technology and institutional arrangements. The section begins with an overview of enactment. The definition adopted here is the process where people act and bring events and structures into existence and sets them into motion. The enactment process involves noticing and bracketing and is the first stage of sense making. As a stream of experiences is encountered actors bracket a portion of it, through a process of selection, which represents retrospective attention to action. This is then retained and feeds into future enactments. The section discusses enacted environments and how they involve both



social and material constructions. The organizing represents the attempt to order the flux of human action, give it a shape and through this meanings and rules are generalized and institutionalized.

The section discussed the relationship between the TEF and the theory of institutionalism since that is the main concept that the framework is built upon. The section elaborates on the components of institutions and how they travel. The section also presented an overview of scripts, which are essentially institutional typifications that actors draw upon at the local level. The section then discussed some of the strengths of the TEF as well as some of the criticisms made by academics. The strengths are that it is based on several sources of ideas such as institutionalism and public administration on IT and IS studies on the social construction of technology. Other strengths include the critical approach to studying e-government, which the area is in need of. Weaknesses of the TEF include an emphasis on stability rather than change, assumptions of a homogenous set of institutions exists in different public sector organizations that work together, as well as the criticism that these ideas presented have been around for many years and have simply been combined and repackaged in the framework.

The final section presented the concept of formats as a theoretical proposition that guides the empirical fieldwork and is revisited in discussion in order to generalize theoretical analysis. There is a lack of emphasis on the mediation of new institutional elements through e-government project. The TEF seems to focus on existing institutional arrangements and not the arrival of new ones and institutional change. There is a need to discuss the role of the global in e-government system implementation and implications for the actors, the organization and the project as a whole.

The concept of formats is defined as a semi-configurable structure that is introduced into organizational contexts through institutional actors and is at the intersection point of technology, institutions and norms and modes of organizing. The constructs are

discussed in detail in the section, and then there is a discussion of how this concept has been used to study civil society organizations. The two themes of organizational change and e-government were discussed to show how this concept could be employed to explore the enactment of e-government in Dubai. The discourse of organizational change and IT was presented to show where formats fit and how the concept contributes to our understanding of how local actors appropriate ICTs.

A format is a concept that represents interplay between local improvisations and social structures introduced into the organization, and institutional actors at the global level. In terms of e-government, the concept of formats presents a means to address the complex nature of IT development and use in the public sector. The concept enabled us to access the local actions in the public sector as people work to develop and use technology in ways that respond to institutional arrangements. The format lens showed us what happens to semi-configured packages of ideas, practices and technologies once they arrive into the organization as people make sense of them and appropriate them.

## Chapter 4: Methodology

This chapter presents the research methodology. It is comprised of four sections. The first section is descriptive and focuses on the epistemological and methodological assumptions that underpin this research. The following sections adopt a confessional style. The second section presents the development of the research questions. The third section focuses on the research design, data collection and data analysis. The section presents an overview of the planning stage and the process of data collection that included interviews, observations and using secondary data sources. The section then presents an overview of data analysis methods if presented in terms of approaches and techniques employed to organize and interpret the field data and to construct a narrative. The chapter concludes with a summary and conclusions.

### 4.1 Underlying Assumptions

This section is descriptive for the purpose of outlining key concepts and principles that this research methodology is built upon. To begin, this research adopts interpretivism as the theoretical perspective or philosophy that underpins the methodology<sup>3</sup>. Adopting an interpretivist perspective defines the way in which the world is envisaged through the methodology. It is based on the assumption that knowledge of the world is a social construction that is not given but is to be discovered, and it is through the interpretations and actions of social actors that the social world is produced and reproduced (Berger and Luckmann 1967; Orlikowski and Baroudi 1991; Crotty 1998).

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<sup>3</sup> Interpretivism here is adopted as an ontology and epistemology (Walsham 1995). There have been other views that place interpretivism as an epistemology that follows a constructivist ontology (Crotty 1998).

The research contributes to studies of information systems that adopt an interpretivist approach, which have been growing steadily over the past two decades. However, it has been noted that in the area of e-government there are few that adopt such a perspective (Heeks & Bailur 2007; Yildiz 2007; Coursey & Norris 2008). Interpretivism is well suited for this research study that adopts a performative view and focuses on the doing to examine the ongoing enactments of e-government systems, which is in line with ideas that have been promoted by many notable academics in the social sciences (Berger & Luckmann 1967; Weick 1979; Giddens 1984; Feldman 2000). The interpretivist perspective is an underlying assumption that can guide qualitative or quantitative research (Klein & Myers 1999; Klein & Myers 2001; Myers 2008). This study is based on qualitative research since it enables the close involvement with the social world of the ICT professionals. Such qualitative research is appropriate for this exploratory study since it leads to rich data and allows for unanticipated findings during fieldwork and the possibility of shifting research plans (Bryman 1984). The experiences of small shifts in research questions, methods and some of the themes explored, in the face of events encountered in fieldwork, will be presented in the subsequent sections on data collection and analysis.

When it comes to conducting research from this vantage point, researchers access the social world by exploring meanings, practices and actions (including symbolic actions) that are formed by language and norms. This involves looking into the social world of the actor and how he or she enacts meanings that constitute actions and social processes. Crotty (1998) explains that as researchers we seek to access this world through culturally derived and historically situated interpretations. It is through the interpretive techniques of qualitative research, which we will discuss in subsequent sections of the chapter, that we can extract a portion of the social world for investigation and then describe and translate meanings (Van Maanen 1998).

An aspect of qualitative research is that the description generated for analysis is shaped by the researcher's experiences in the field as she attempts to understand things from the social actors' perspective and preconceptions (Bryman 1984; Walsham 1993; Van Maanen 1998). The interpretivist perspective acknowledges, "the map cannot be considered the territory" (Van Maanen 1998, p.520). It is important to consider the element of reflexivity as researchers also endow their own predispositions and interpretations into what is being observed and the interactions that take place between the subject of enquiry and the researcher, which can potentially shape the perceptions of both (Walsham 1995). The attributes of interpretive field research encompass many of the ideas discussed here and have been summarized by Klein and Meyers (1999) in seven principles: hermeneutic circle, contextualization, interaction between the researcher and the subjects, abstractions and generalizations, dialogical reasoning, multiple interpretations and suspicion. The following sections adopt a confessional style to discuss how the fieldwork was planned and conducted and the methods employed for analysis of empirical findings.

## 4.2 Research Questions

I began the research with a general proposition which was that the implementation of e-government systems and its outcomes was shaped by dynamics that take place between public sector staff, which are informed by institutional influences. Two e-government systems were selected to be the center of the case study for my research. The formation of the initial research question was shaped by theories related to the field of e-government which include Fountain's (2001) technology enactment framework and Dunleavy *et. al* (2006) digital era governance. The research question was shaped further by an idea I found inspiring which was the concept of global formats (Sassen 2006a; Sassen 2006c), which emphasized the role of global actors in introducing information systems in different contexts according to particular norms and practices, and in the local context people make sense of and appropriate these formats in their daily work and pre-existing ideas.

The research question that guided the planning stage was: *To what extent do global formats contribute to the shaping of the information infrastructures for e-government?*

There were other practical sub-questions that were defined at that stage which included: How was the national e-government initiative set up? Who are the local and global actors involved in the project and what are the different meanings they have for e-government? The initial pilot study was guided by these theoretical and practical research questions.

As the fieldwork in Dubai progressed the focus of the research evolved to focus on the micro level processes and the role of the local actors. The fieldwork involved exploring the history of the project from the vantage point of the ICT professionals working on the project. There were several issues raised during the early visits such as the newness of the concept of e-government at the time and the involvement of international consultants in the planning of the e-government project with new ideas and practices. At that point,

several questions were developed in order to access the ICT professionals' world in terms of past experiences, expectations, perceptions and actions. The interest in the micro level processes and cognitive processes involved led to the employment of the sensemaking and enactment perspective (Weick 1979; Weick 1995) a concept I was familiar with before beginning fieldwork and was relevant in understanding the perceptions and actions of local actors. Based on this perspective and experiences in the field, the research questions evolved into:

*How did the ICT professionals enact the e-government systems and what were the implications of the enactment process for the e-government project and the professionals themselves?*

The theoretical question took the formulation of a series of practical sub-questions. They relate to the initial stages of setting up the project, the process of planning and developing online services on the website, experiences, perceptions and actions of the ICT professionals over the course of the project, and finally the (perceived) outcomes of the project.

### **4.3 Data Collection and Analysis**

Now that the process of developing the research question was presented, it is time to turn attention to how data was collected and analyzed. The fieldwork was based on a longitudinal case study (Yin 1981; Yin 1994) that was undertaken over the period of one year and eight months, from October 2006 up to the end of May 2007. During this period several visits were made to Dubai that ranged from a few days up to a week. The fieldwork consisted of three phases.

The field visit in October 2006 was a preparatory study to explore the e-government initiative as a whole and to select a project for the case study. The objective was to gain a better understanding of e-government in Dubai by discussing the initiative with a number of IT managers in the public sector, and then select one or two of their current projects as a case study. During this time, I conducted five semi-structured interviews with public sector staff from the departments of Municipality, Immigration, Road and Transport Authority, and within one of the public hospitals, and a manager from DeG. The preparatory study gave me a real feel of the nature of e-government in Dubai, which the materials that I have read beforehand did not portray. A follow up field visit took place in a week's time. I selected the e-government project of DM based on recommendations made by interviewees to focus on their experience and from information gathered in that first visit.

During these times, I was informed of the Dubai School of Government, which conducted research on the e-government initiative. I contacted the college to get in touch with one of the academic researchers, who surprisingly turned out to be a former colleague at LSE, when I was undertaking a Masters course the year before. This was a valuable coincidence and he kindly agreed to help identify useful contacts and arranged appointments for interviews with important figures in the public and private sector.



In the second phase of the fieldwork, which began in December 2006, I continued to explore the history, institutional structures and developments in the e-government initiative. There were a few visits made to DM to explore the actors involved, planning processes, objectives, and the organization of work and outcomes. During both phases, theoretical frameworks on e-government and globalization influenced the interview questions and investigation.

The third phase of fieldwork started in April 2006 where the fieldwork explored the implementation of the e-government system in DM. This consisted of several field visits that involved intensive interview sessions with most of the ICT professionals in DM and members of the private sector, and other public sector organizations. The primary objective was a closer examination of what happened from the vantage point of the ICT professionals by focusing on two themes. This began with a historical reconstruction of what happened over the course of the project with an emphasis on perceptions and actions. The focus was then on capturing ongoing issues and current perceptions that the ICT professionals have of their roles and the project. The interviews were informed by some of the concepts from Weick's (1979; 1995) work on sensemaking and organizing.

The next section presents the data collection process, in terms of the methods employed, detailing the interview process and concluding with reflections of issues that emerged in the field.

### ***Data Collection Methods***

The data collection methods included semi-structured interviews, observations and reviewing technical and organizational documents and the study of government websites. The data collected was used to construct a historical reconstruction of the inception and developments of the e-government initiative, as well as the engagement of the ICT professionals in the planning, development and maintenance of the e-government systems. I also became familiar with socio-cultural norms and practices adopted in the

public sector and the ICT professionals' lived experience of working on the project, as they shared their expectations and stories.

### ***Interviews and Observations***

The interviews conducted during fieldwork were 45 in total<sup>4</sup> (See Table 4.1). The length of the interview was approximately one to two hours long, but some interviews were only for half an hour given time constraint or limited responses. Initially, I focused on participants that were engaged in the e-government initiative as a whole. At a later stage I focused more on participants that were directly engaged in DM's e-government project. The interviews were semi-structured, and involved tape-recording, or extensive note taking depending on the participants' preference<sup>5</sup>.

The interview questions evolved over time. In the preparatory study the questions centred more on the e-government initiative as a whole focusing on themes of the influence of the global actors and best practice and international standards, how work is coordinated with e-government systems, and changes that were taking place. This was inspired by the theoretical concept of formats. The interview questions later were tailored around understanding the e-government project's history, organizational structure in the IT department, implementation stages, actors involved, work arrangements, roles and tasks, employee experiences, expectations and perceptions.

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<sup>4</sup> There were 34 participants, 5 participants were interviewed twice, and 6 participants were interviewed 3 times.

<sup>5</sup> At times participants would share information after the tape recorder was turned off, simply since it was less formal.

Table 4.1 Interviewees and Number of Interview

Interviewees	Number of Interviews <sup>6</sup>
Managers at Dubai eGovernment <sup>7</sup>	3
Research Associate at Dubai School of Government	2
IT Managers in other public sector organizations	3
Managers from private sector organizations: CISCO, Microsoft, Booz Allen Hamilton, Pink Elephant	4
E-government Section, IT Department, DM	
Head of the E-government Section	1
Strategic Planning Unit	6
Development Unit	13
Support Services Unit	9
IT vendor in-house	1
Other interviewees	3
Total Interviews	45

<sup>6</sup> The number of interviews include second and third round of interviews with some of the participants. Out of the total of 34 participants, 8 took part in a second round of interviews, and 3 took part in an additional third round of interviews.

<sup>7</sup> One was a manager, another had the position of consultant; the third was a former manager and at the time of the interview was working in a large private organization.

The interviews often started with a history of the e-government initiative as a whole and then discuss the initiation of the project in the organization itself. I began with an extensive list of questions, which I then realized were somewhat constraining. With time, I relied less on the list and attempted to understand what happened from the vantage point of the participants by following up some issues and events they brought up. For instance, in discussions of expectations of the e-government project, the participants sometimes would reflect on past experiences and I would ask further questions about that.

Extensive notes were taken during each field visit based on observations made of the participants, the work environment and the research site in terms of the layout of office spaces and the building. I took notes of reactions that the participants showed to certain questions or themes (i.e. excitement, boredom, indifference) and of the tone in which they were speaking which sometimes changed to emphasize the importance of a theme and at times showed that they wanted to move to other topics. I also reflected on the impression I got from the overall interview and if there are other questions that still need to be addressed in follow up interviews with others or the same participant. Figures 4.1 and 4.2 include excerpts from notes on the description of the place.

Figure 4.1 Observations on One of the Research Sites

Dubai e-government was on the 13<sup>th</sup> floor of a 56-storey building that had a security desk and electronic turnstiles on the ground floor. When I reached the 13<sup>th</sup> floor, I was directed towards the meeting room, which had a big window that overlooked the city's skyscrapers, some of which were still under construction. The interview provided insight about the e-government initiative as a whole and the ambitious plans that were in place.

Figure 4.2 Observations in the Work Environment

There was a stark difference to the feel of the public sector organizations I later visited. The large public sector organization had numerous divisions and sections that seemed identical and difficult to find your way across. The long corridors led to numerous rooms, one of which was for the ICT developers in the e-government section. The room itself had several glass and grey partitions. The dominance of the grey colour in the doors, furniture and layout of offices and even partitions within workspaces was symbolic of rigidity and routines and reflect the bureaucratic institution.

Most of the interviews were conducted on-site, at DeG, the Microsoft office at Dubai's Internet City and DM and other public sector organizations. There were a few exceptions where interviews with managers from the private sector were held at one of the meeting rooms at Dubai School of Government, or using the telephone conference facilities there for one interview. Now in retrospect, there was a learning curve in the process of interviewing participants. Initially, I relied on a set of ten interview questions that were inspired by the theoretical proposition of formats (Sassen 2006a; Sassen 2006c). The themes in the initial set of questions included: the influence of the global actors, best practices and international standards, how work is coordinated with e-government systems, and changes that were taking place. Some of the interviewees would depart from the questions and provide a historical overview, personal reflections and experiences. On two occasions I was not given a chance to use the interview questions since they were eager to take control of the interview and share their story.

Figure 4.3      Observations of Participants

I was shown the way to the development unit's office by one of the business analysts. The office was an open space area with partitions that divided the room into four sections. The developers were laughing and having a loud discussion, which was interrupted when we entered into the room. The business analyst introduced me to them and explained to them about my research, they greeted me and agreed to be interviewed in another visit. I asked them if I could take a photograph of them for my research, and they happily agreed.

### ***Reviewing Secondary Data***

The data collection process included reviewing secondary sources on the area of e-government and the Middle East and Dubai. This took place before and after field visits. For example, after the first few field visits I found it challenging to construct a coherent story from the data compiled. Also, I developed an interest in exploring the actors working on the project and this required a modification to the theoretical lens. This led to reading work by Weick (1979; 1995) on sensemaking and organizing, which focuses on the role of human agency and seemed relevant to the case study. Particularly since comments by participants often emphasized the newness of the concept at first and how they came to learn about it over time.

The early field visits and the prominent role of the private sector prompted reviewing publications and conference proceedings from regional initiatives like the MENA Development Conference and the Dead Sea Conference organized by the UN and the OECD, where Dubai was allocated the e-government theme along with South Korea and Italy. International organizations' websites such as the UNDP's ICT for Development in the Arab World website was reviewed.

The participants provided technical and organizational documents and monthly magazines on e-government and shared some samples of presentations when the e-government initiative was initiated (See Table 4.3). They also pointed to the importance of examining the website since it carried crucial information on mission statements and objectives that they considered to be important for my research.

The fieldwork experience was enriched with the observations made and the photographs taken of buildings, offices, and layout of areas such as the kiosks at the ground floor used by the public. I also made observations on how participants were interacting with each other, many times noticing how they were socializing at the work space. I also took note of impressions I got from the visit and interviews. For example, noting that everyone was busy with meetings that day. Another example was when the participants were more comfortable during the second round of interviews.

Table 4.2      A List of Secondary Data Sources

<b>Secondary Sources of Data</b>
International and regional conference proceedings
DVD of a regional strategy forum
Economic and demographics statistics
Official e-government websites
Monthly Magazines e4all published by Dubai eGovernment
Local and Regional Newspaper Articles
PowerPoint Slides by Consultants
Organizational chart
Job descriptions document for the development unit
Coding template and checklists documents
Snapshot of Support Magic Application
Technical Specifications documents
List of online services in phases
Photographs



### ***Issues during Fieldwork***

There were many reactions evoked given the qualitative nature of my research. Given that most of the participants had IT backgrounds, they expected my research to be based on managerial and technical concepts. Some were perplexed on why I was seeking to understand their experiences and histories. There were a few that were less engaged because of what seemed to be irrelevant questions. Others found this fascinating. For example, during an interview with a manager in the e-government section, I asked a casual question about why there was a giant old Arabic language dictionary that was on one of the side tables. He explained that it belonged to a former employee many years ago. He then pointed out that he was very eager to know how this links with e-government and what connections I made in my mind.

One of the challenges I faced during interviews was accessing the actual perceptions, practices and outcomes of the project and to move beyond the rhetoric and logic of representation (Czarniawska 2009). There was often an emphasis on successful implementation that masked some of the issues that took place. For example, the rhetoric of representation was illustrated when one of the participants explained that what is being discussed is published on the website. Accessing the perceptions and significant events required persistence in following up important themes such as breakdowns in the system or challenges faced in implementation. I was also making note of ongoing issues that were reported to me.

Another challenge I faced during interviews was mastering the use of appropriate organizational rhetoric that they were accustomed to. This included terms related to organizational structure, roles, and system applications. This took some time, since they always expected me to know the world they were engaged in and many of these terms were taken for granted. There was also the issue of being between an insider and outsider. An insider in that I was from the Gulf region and aware of the socio-cultural

norms and with a general understanding of the e-government initiative. Therefore, participants would sometimes ask what was going on in Bahrain and why I was not researching my own country. I was also aware that I was considered an outsider being a PhD student studying abroad and not part of the public sector organization. Building the participants trust involved being aware of this and balancing between these aspects of my identity.

Just as I was eager to access their world and use their rhetoric, some of the interviewees were interested in using academic terms. They would engage in rhetoric from business schools such as business process reengineering or stages of growth. Some of the participants, upon understanding my research domain, engaged in ideas of cultures and institutionalized ways of working or how they learned (sensemaking) on the job in an attempt to assist me in my research.

## **4.4 Data Analysis Methods and Experience**

This section presents the analysis techniques and methods. Data analysis started from the preparatory study that took place in October 2006. To prepare for analysis, the interviews were transcribed and this involved translating some of the interviews and adding notes on observations made of the research site. This process often took place on the same week. In the transcriptions I often reflected on important themes related to social theories and the general impressions of the visit and the participants. For example, I reflected on themes of unmet expectations and uncertainty that links with the sensemaking perspective. I also took notes of questions that needed to be followed up for clarifications in future visits.

Initially I started writing and creating tables based on themes relevant to each group of participants, the table classified participants based on their roles: developers, support staff, managers from the private sector. Some of the themes employed in the tabular analysis are presented in table 4.4. I was also using the ATLAS.ti software to code the data based on theoretical concepts such as institutions and global actors. Later on, the coding was to trace historical and organizational aspects related to the e-government initiative. For example, ATLAS.ti was used to identify important milestones in the e-government initiative, institutional structures for e-government, changes to organizational structure, positions and roles. Table 4.3 presents a sample of codes for ATLAS.ti. The objective of using ATLAS.ti was not to follow a grounded theory approach, I employed it as a tool to organize and categorize the large quantities of data. This was to write the descriptive part of the case study and to help find patterns and a common thread to write a coherent narrative.

The process of constructing narratives was an iterative process. I alternated between tabular analysis and writing up the case study several times to construct the narratives. The tabular analysis at this point involved using different theoretical constructs from the

sensemaking and organizing perspective (Weick 1979; Weick 1995) and institutional theory (Scott 2001), and at times even modifying the conceptual framework. I identified macro level, mid-level and micro-level events and themes during this process.

There were two significant milestones in the analysis of data. The first significant milestone in the analysis of data was when I developed two distinct narratives – a descriptive and historical narrative of the e-government initiative and then a narrative that depicted local interactions and lived experiences. The second narrative focused particular events and actions taken by actors, which a number of them have showed consensus on during interviews.

The second significant milestone was when I began developing tables from these narratives to analyze the local interactions of sensemaking, enactment and organizing. I analyzed it for: moments of ambiguity, breakdowns, enactments, histories and personal experiences. It is important to note that the act of telling the story by an individual is a sensemaking process in itself, and sheds some light on aspects that the respondents would like to highlight or suppress. This may be driven by an objective of impressing the researcher and others that hear the story, or be shaped by institutional constraints. Even so, we argue that the constructed narrative represents a rich source to analyze sensemaking and organizing processes.

From one perspective the interviewees were engaged in sensemaking during interviews as events were recalled, but the objective here is to build the narrative to capture events and actions that took place during the period of 1999-2007 as the ICT professionals worked on the project. A similar approach of employing the sensemaking perspective to analyze constructed narratives has been conducted by other researchers in the study of ICT projects in healthcare (Jensen et al. 2009) and the development of computer games (Nandhakumar & Jones 1997).

There was a need to understand these enactments in light of the broader socio-political and economic context. There were additional tables constructed to identify relationships between enactments and institutional dynamics and this links to global discourses and disembedded institutions.

Table 4.3 A Sample of ATLAS ti Codes for Historical Aspects

The Historical and Organizational Themes
<p>DM e-government project</p> <p>National e-government initiative</p> <p>Phases of Implementation</p> <p>International Institutions</p> <p>Institutional structures</p> <p>Organizational structures</p> <p>Roles</p>

Table 4.4 A Sample of Themes for Tabular Analysis

Themes used in Tabular Analysis of Actors and Groups
<p>Initial Reaction</p> <p>E-government</p> <p>Tasks</p> <p>Formal Training and Learning on the Job</p> <p>Identity</p> <p>Technology</p>

## 4.5 Summary and Conclusions

This chapter presented the methodology of this research study. The chapter began with an overview of the underlying theoretical perspectives and assumptions of the methodology. Basic concepts of interpretivism as an epistemology were presented with a discussion of how it links to qualitative research. The chapter then moved to a confessional style to describe of the development of a research question and an overview of the research design, as well as data collection and data analysis processes.

Data collection was premised on the theoretical foundation developed in the planning stage that consisted of ideas and concepts that are relevant to e-government which include the technology enactment framework (Fountain 2001) and digital era governance (Dunleavy *et al.* 2006). Theoretical ideas on globalization and the concepts of formats (Sassen 2006a; Sassen 2006c) were also guiding the data collection process. The data collection process included interviews with actors from the public sector, management consultants and managers from IT hardware and software firms and academia. Observations were made during field visits of the buildings, office spaces, work environment and interaction among staff. Notes were also made on the participants in interviews and impressions of the researcher. Secondary sources were also reviewed during different periods of the fieldwork to plan the visits, answer emerging questions on certain themes brought up during interviews. This included conference proceedings, historical and social studies on the region, websites and technical documents.

One of the turning points during the fieldwork was the introduction of social theories on agency, which took the form of Weick's (1979; 1995) sensemaking and organizing perspective, in order to access the experiences of the ICT professionals. This was through analyzing historical narratives constructed from interviews and secondary sources. During data collection, there was a shift from exploring the institutional structures, objectives and history of the e-government initiative in Dubai and the region



to an investigation of micro level perceptions and actions that constituted a lived experience of these globally inspired projects.

The section on data analysis revealed the iterative nature of analysis. The interviews were (translated and) transcribed during the same period of the field visit. Extensive notes on impressions, observations and questions were made at that point. The analysis at first was guided by theory and involved categorizing data based on theoretical constructs in tables, as well identifying historical events and developments. The large corpus of data was difficult to sift through to map out the history and key organizational actors, structures and objectives. Therefore, the software ATLAS.ti was used as a tool to organize the data for writing the background and history to the project.

The later stages of analysis involved writing several descriptive case studies and detailed tables that analyzed narratives based on theoretical constructs. The result was two narratives: the historical narrative that outlines the national and organizational e-government projects, and a narrative of the ICT professionals' vantage point that includes their experiences and perceptions. The tables and narratives formed the foundation for Chapter 5 and Chapter Six.

Table 4.5 Interview Questions

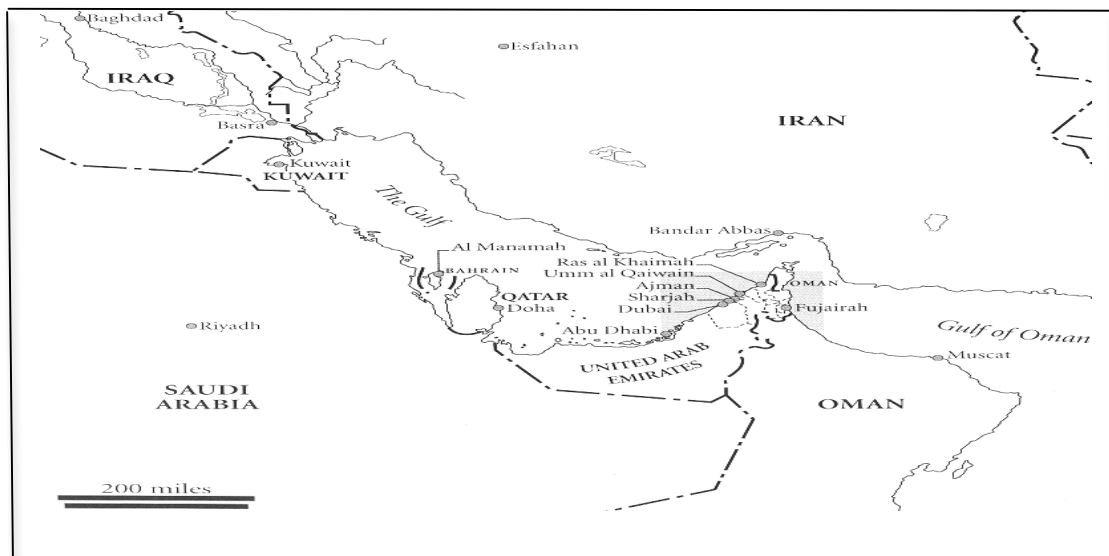
<b>Interview Questions</b>
<b>Initial Reactions, Expectations and Experiences</b>
<p>How long have you been working with the e-government project?</p> <p>What was your initial reaction when you were first introduced to e-government? (As an individual/ group).</p> <p>What were your expectations for your role/ department/organization? (Aspects of change and stability).</p> <p>What has changed in you since the project was initiated? The unit as a whole, and the organization?</p> <p>What do you perceive e-government projects are for? (Economic and political)?</p> <p>How are these goals being achieved in the organization?</p> <p>How do you see yourself contributing to these goals?</p>
<b>Roles, Work Practices, and Identity</b>
<p>What was your role before the e-government project?</p> <p>Do you have a new role now that e-government is implemented?</p> <p>What are your tasks &amp; how do they relate to those in the unit?</p> <p>What events make up an average day in the department? (How an average day begins, progresses and ends.)</p> <p>With the e-government project, what do you consider are aspects of your job that have been improved, and what aspects do you view negatively?</p> <p>How does the e-government project shape the decision-making process in the unit and the department?</p> <p>How does the fact that this is Dubai affect your role? (Do you think that people with your role working on other projects face similar conditions?)</p> <p>How would you describe the position of the unit/section in the organization given the prominence of the e-government project?</p>

<b>Interview Questions</b>
<b>Interaction and Relationship with Actors</b>
<p>What individuals/groups do you interact with to get your tasks done?</p> <p>Are there relationships that have to be managed to get the job done?</p> <p>Are you aware of their organizational culture and try to adjust?</p> <p>In what ways is the sharing of tasks challenging and in what ways beneficial?</p> <p>Did the interaction with customers change with e-government?</p> <p>Do you expect the unit and department's position to change in the future?</p>
<b>Training and Skills</b>
<p>Did you attend any training sessions or workshops on e-government?</p> <p>How did you react to them at first?</p> <p>What were aspects that the training helped with?</p> <p>Were there issues you wished were discussed?</p> <p>What are things that you think can only be learned by doing your job?</p>
<b>Technical Features and Functions</b>
<p>How would you describe the operation of the e-government information systems?</p> <p>What aspects about them would you like to see changed and in what way?</p> <p>Are some functions used more than others, and what do you think accounts for that?</p> <p>How does the department cope with the history of these systems?</p> <p>Are amendments to design frequent, &amp; are the systems flexible enough for that?</p> <p>How does the department cope with changing technologies and trends in e-government?</p>

## Chapter 5: A Historical Narrative of the Implementation of E-government Systems

The objective of this chapter is to present the empirical findings from the case study. The chapter is comprised of five sections. Section one presents an overview of the context of Dubai, UAE. Section two presents the development of the national initiative for e-government in Dubai from year 2000. Section three presents the empirical findings, which have been categorized into three thematic categories: early activities and planning, the project management strategy and the implementation strategy. The remaining sections present the process of online service development and outcomes. The chapter concludes with a summary of key ideas.

Figure 5.1 Map of the Arabian Gulf Region



Source: (Sampler and Eisner 2003)

## **5.1 Background to the Case Study**

### ***The Formation of the United Arab Emirates***

The United Arab Emirates is a federation of seven emirates (states) that was established in 1971. The UAE states are Abu Dhabi, Dubai, Ajman, Fujairah, Ras Al-Khaimah, Sharjah and Umm Al-Quwain. The UAE was formally a British protectorate and was known as the Trucial States. This referred to the signed treaties with the British government in the nineteenth century; these treaties were signed as early as 1892 (Zahlan 1998; Davidson 2005; Davidson 2009; Ulrichsen 2009; Abdulla 2010). A significant historical milestone was the creation of the Trucial States Council in 1952 that included the rulers of all seven states. The members of the council met bi-annually to consult with each other and to make suggestions to the political agent and the Trucial State Development Office (Khalifa 1979; Peck 1986; Taryam 1987; Zahlan 1998; Davidson 2005).

There were a number of modest developmental projects that were initiated during the 1950's under the Trucial State Development Office. They were mainly in the areas of healthcare, agriculture, development of roads and vocational training. Other activities included the collection of statistics and conducting surveys of water and soil resources (Taryam 1987; Davidson 2005). By the mid 1960's there was a number of services being offered: health services, agriculture services and scholarships to talented nationals (Davidson 2005). These projects were developed even further in the 1960's with major contributions from the state of Abu Dhabi. During that period, the Trucial States' main source of income was based on their limited resources in the areas of agriculture, fishing, seafaring and the pearl industry (Zahlan 1998; Shihab 2001).

In 1968 the British government informed the Trucial States of its intent to end the treaty relationship with them (Taryam 1987; Zahlan 1998; Davidson 2005). The Trucial State Council and the Development Office and Development Fund, were then replaced with

formal state institutions and the federation of the UAE was formed in 1971 (Zahlan 1998; Davidson 2005; Fox et al. 2006). Abu Dhabi played a major role in the formation of the federation (Fox et al. 2006). The Supreme Council was developed during that period and was comprised of rulers that were responsible for the issuing of federal laws. The Supreme Council had a chairmanship for one year, which was to be rotated each year among its members (Zahlan 1998).

The development strategy in the UAE depended mainly on resource-based industries to make use of the abundant natural resources (Shihab 2001; Davidson 2005; Abdulla 2009; Abdulla 2010; Koren & Tenreyro 2010; Michaels 2010). Shortly after the establishment of the federation, there was an increase in oil production and exporting, and a significant benefit came from the rise in oil prices in 1973. From the vantage point of the UAE, one of benefits of developing these industries was to diversify economic income. This was important since some emirates, such as Dubai, had low oil reserves. There was also a favorable environment for the development of the industrial sector given the abundance of mineral resources, financial capital, flexible labor and employment policies and political stability (Shihab 2001).

Several of the emirates initiated developmental projects over the years. Dubai was increasingly promoting its assets, Sharjah was marketing itself as the center for learning, and Fujairah was benefiting from making profit from its shipping lanes (Heard-Bey 2005). Several studies note the large scale of these projects and the speed in their implementation in Dubai (Hvidt 2009; Abdulla 2010). Such massive projects require more than the local manpower to support them. Even the expatriate community was inadequate to sustain the growth and speed of these projects. This of course meant that there were constant challenges related to the social cost of such projects (Heard-Bey 2005). As Abdulla (2010) explains, the ambitions to become part of the global systems, and the institutional changes taking place as a result, meant that there were social costs. One example is the demographic imbalance in the UAE and Dubai and the tensions of

retaining local identities and enrolling into the global. Abdulla (2010) questions the social longevity of such an arrangement and its implications for the future for the countries in the region, which are all experiencing such social issues. Even with these social issues, efforts are still directed towards being a global city, and working with international experts and following global best practices have become institutionalized as is the case in many cities around the world (Roy 2009).

### ***Political Structure of the United Arab Emirates and the UAE***

The political structures of the UAE have been in place for more than four decades and are a combination of a federal government and an inherited role of tribal leaders (Heard-Bey 2005). The political structures combine both formal and informal institutions and reflect a neopatrimonial structure for leadership (Davidson 2005; Hvidt 2011). Some argue that the unorthodox nature of these political structures provide the UAE with its strength (Shihab 2001; Heard-Bey 2005). The main federal institutional structures of the UAE are the Supreme Council, the Council of Ministers, the Federal National Council and the Federal Judiciary. The Supreme Council is an extension of the Trucial States Council and consists of the seven rulers who have the power to initiate policies and reject laws and appoint civil servants. The Supreme Council includes a president who is elected by members and has a permanent position (Fox et al. 2006).

Most of the policies in the UAE are formed by the Council of Ministers, who also monitor public expenditure and approve federal budget. The Council consists of 30 members from government ministries and ministers of state from each of the emirates, although its structure is favourable towards Abu Dhabi and Dubai. The council reflects a neo-patrimonial model where members come from royal families or long established tribes (Jakka 1993; Davidson 2005). However, over the past decade many technocrats have been enrolled who come from other Emirati families often with professional experiences and postgraduate degrees from abroad (Al-Sayegh 1998).

The Federal National Council (FNC) is the legislature in the UAE. It reflects the Islamic principle of Shura or consultation in decision-making. In 1971 the FNC was seen as adequate to represent the small population of the emirates (Jakka 1993; Davidson 2005). The representatives came from key merchant families and prominent tribal members who are considered to have a central role in their communities. Until 2004 all members were appointed. Currently, half the members of the council are elected through electoral



colleges. This change is an attempt to incorporate representatives of other less known families and interest groups (Abdulla 2007; Abdulla 2010).

An additional component to the decision-making structures noted so far is the informal institution of the majlis (Davidson 2005; Heard-Bey 2005; Salem & Jarrar 2007). For decades, the majlis represented a consultative channel in which citizens would discuss issues of concern with their rulers during gatherings. Even after the formation of the political structures of the state, the majlis runs alongside the FNC given the significance of meetings between the rulers and the public (Salem & Jarrar 2007). The role of the informal institution has been acknowledged by the UNDP where the majlis represents a forum to discuss issues related to social development such as women empowerment, the expatriate population and youth employment.

According to the constitution, the federal government is responsible for a number of areas such as defence, foreign policy, immigration nationality, communication, health, justice and education. Davidson (2005) argues that the UAE is more of a confederation than a federation. The constitution permits the local governments of each of the emirates to offer public services and uphold standards and maintain the law. The local government of each of these ministries in theory are subordinate to the ministries in the Council of Ministers. There has been some policy issues resolved within each of the emirates, outside the federal system. Dubai believes that this autonomy of the emirates within the federation was a source of strength, since it preserved the region's tribal informal systems and characteristics of each emirate that makes them unique. Dubai, as for each of the emirates, consists of the rulers' court that presides over local governments and possesses their own civil services, and public works departments. The local decision making processes in each emirate varies. In some emirates such as Abu Dhabi, Sharjah and Dubai there is an executive council that consists of the ruler and heads of local government departments to supervise local government.

The creation of the federation and the development of political structures was a process fraught with challenges. As indicated by Davidson (2005) who draws on Al Sayegh's (1998) work, there were three phases to the federation. The phases are: the creation of the federation from 1971-1979; an acceptance of the federation from 1980-1986; and the maturity of the federation from 1987 onwards. Developments in the UAE have contributed to this maturity that includes the creation of the central bank, overcoming disputes over boundaries and the contributions to the federal budget by the emirates. Another factor that contributed to maturity of the federation is the increased integration between Dubai and the UAE federation as Dubai merged its army with that of the federation in 1996, in order to focus on its economic development projects (Davidson 2005).

### ***An Overview of the Public Sector and New Public Management in the UAE***

Since the discovery of oil in the 1960's, the UAE has found it necessary to create an apparatus to deal with the developments taking place in the country (Jakka 1993; Davidson 2005; Heard-Bey 2005; Fox et al. 2006). With the formation of the UAE, a federal public system was formed and was concerned initially with social and economic development and the building of an infrastructure such as the construction of roads. The level of development and the resources available varied for each of these emirates and for that reason the federation was a means to assist in the development for regions that required support (Davidson 2005; Heard-Bey 2005).

There were a number of challenges that the public sector faced that relate to the arrangements between the federal and local public sector systems (Jakka 1993; Jakka 2004; Davidson 2005; Heard-Bey 2005). In the early years, the decision-makers were eager to modernize the entire country and thus were engaged in speedy infrastructural and social development projects. The assumption was that over the years the individual political existence would fade away. However, there is currently an autonomy for individual emirates that has come to define the nature of the federation (Heard-Bey 2005). Jakka's (1993) study of public administration in the UAE reveals a number of problems that the federal government is experiencing. One issue is the economic disparities of each of the emirates that have an affect on the performance of local public administration systems. Other problems include excessive centralization and the weakness of the federal system in comparison to the local systems in place.

New public management in the context of developing countries is a loosely defined term that refers to international public sector reform ideas that relate to the involvement of the market in public sector activities (see Chapter Two). NPM projects are often adopted in a piecemeal fashion compared to western countries from which these ideas originate (Polidano 1999; Common 1998). In the context of the UAE there have been efforts since

the 1980's, shortly after the formation of the federation, to improve public administrative systems. The federal government invited the UNDP to evaluate public sector performance and to provide a report to improve the public administration system with key findings suggesting the need for training of public sector staff and to ensure merit-based employment (Jakka 2004).

There had been several initiatives in the 1990's that were introduced to improve the quality of public service delivery. This was particularly the case in Dubai since it was seeking to position itself as a commercial hub (Jakka 2004). Since 2000, the UNDP has set up the Programme for Governance in the Arab Region, referred to as POGAR, which was established, to evaluate, give advice and assist in improving public sector organizations in the region. Over the years, international organizations involved in the Middle East region have framed NPM ideas as a means for modernization and transforming governance. The NPM ideas are considered to be contributors to the establishment of strong institutional structures such as effective public administrative systems (Common 1998; Jreisat 1990). The UNDP emphasized that the UAE uses ICTs to improve efficiency and effectiveness of the public sector. One of the ICT initiatives promoted by POGAR is e-government ([www.undp-pogar.org](http://www.undp-pogar.org)). Thus, e-government projects have been implemented across the federation, with Dubai as one of the leading adopters.

Similar to other countries in the Middle East region, there have been several privatization initiatives in the UAE (Ayubi 1996; Ciborra & Navarra 2005; Mansour 2007; Mansour 2008; Thatcher 2009; Federation of UAE, Chambers of Commerce and Industry 2011). For instance, there were a series of privatization projects in the UAE since the 1990s, which introduced market forces to improve service delivery by the public sector. As Thatcher (2009) notes, these privatization policies, particularly those related to creating independent regulatory authorities, are outlined in bi-lateral free trade agreements with the US. In the context of the UAE, there has been an adaptation of privatization

initiatives to fit with economic and political structures of the state. For example, privatization projects have been implemented for some government sectors and central government departments such as health and education were retained by the state in order to sustain the welfare state and informal institutions that define the relationship between the citizens and the state (Mansour 2008). However, since the 1990's there have been a series of projects that focus on the quality dimension of public sector service delivery (Jakka 2004; Ayish 2005; Mansour 2008), particularly in Dubai which aims to position itself as a commercial center in the Gulf region (Sampler & Eigner 2003; Davidson 2005).

In the Middle East region, more general past initiatives that have focused on the role of the private sector and on the quality dimension in public sector services have moved from an emphasis on modernization of the public sector to initiatives of good governance (Jreisat 1990). This is illustrated in the UAE's engagement in the POGAR initiative by the UNDP in 2000 ([www.undp-pogar.org](http://www.undp-pogar.org)). As part of the POGAR project, the UAE has been involved in a series of projects to improve public sector performance and budget management that focuses on the employment of ICTs. Some studies have noted that in the GCC, the development of e-government initiatives involves a stronger emphasis on creating a clientistic culture in the public sector (Arif 2008; Murphy 2009). The emphasis is on promoting ideas of the customer, which refers to citizens, residents and businesses that take up public sector services.

Over the years, there were other developmental initiatives in Dubai such as the knowledge-based economy initiative in 2000 that is driven by an ICT industry (Abdulla & Nicholson 2009; UNDP & Mohammed bin Rashid Al Maktoum Foundation 2009). There were three aspects to the plan: building on existing competencies and strengthening them, through tourism, trade and transportation. Also, there was the objective of using existing competencies to support the rising ICT industry, media and finance, all of which involve ICTs. Finally, there is the objective of building research and

development facilities to explore emerging sectors such as wireless technologies, etc. As part of this movement to exploit the transformative potential of ICTs, there were several initiatives to encourage the use of ICT's in Dubai. These initiatives include investments in areas of e-government, e-learning and e-commerce. One of the most prominent of these initiatives is Dubai Internet city, DIC, which was conceived to create the infrastructure and environment that meets the standards of a global city (Ameinfo 2001; Sampler & Eigner 2003).

## **5.2 The National E-government Initiative**

The e-government initiative, which is the focus of this case study, originated in 1999 and was officially launched in 2001 (Ameinfo 2001; BBC News 2001). The national initiative is considered one of the earliest e-government initiatives in the Middle East region (DeG Management Consultant). The initiative's early beginning was during a period of time that was marked with an evolving discourse on the role of ICTs in the public sector, as depicted in reports and conferences of international organizations.

### ***The Creation of Institutional Structures***

The initial formation of the e-government initiative in Dubai was in 1999 by H.E. Sheikh Mohammed bin Rashid Al-Maktoum, the Crown Prince of Dubai (Arabian Business August 3, 2000; [www.dubai.ae](http://www.dubai.ae)). By year 2000, an e-government task force was set up and consisted of managers from different sectors in the government. In April 2000, the e-government initiative was officially announced in the media. The announcement outlined the objectives of e-government and the deadline of 18 months for the development of operable e-government systems in all public sector organizations with 70% of services offered over the Internet ([www.dubai.ae](http://www.dubai.ae)).

In January 2001, an 18 month contract was signed with the international IT consultancy (EDS) and its management consultancy (AT Kearney) to provide consultation and project management for Dubai's e-government initiative that spanned across 14 public sector organizations. EDS's job was to provide "the government with a strategy with how to do it, not the implementation as such." (Executive Director of EDS in the Middle East, Arabian Business; January 28, 2001). EDS had significant experience in working on e-government initiatives in other countries such as Australia, Malaysia, and the UK (AmeInfo September 5, 2001).

The objective from the contract relationship with EDS was more than simply outsourcing the e-government initiative to a third party. The objective was to have some degree of knowledge transfer take place, from EDS to the e-government staff. This was to ensure that the internal e-government employees gain adequate knowledge and expertise to run the project on their own after the contract is completed (Arabian Business, January 28, 2001). The consultancy firm opened an office in Dubai upon signing the contract and there were 11 members of its staff working with the e-government task force to assess and re-engineer processes for e-government. Initially, the plan was to develop four systems that offer complex services and require inter-organizational collaboration amongst several public sector organizations.

The consultancy also took the responsibility of appointing legal experts to assist in the management of contractual relationships with other firms that worked on e-government. There were preliminary ideas in the air on how the e-government initiative will run and the possible changes to existing institutional structures of the state. For example, apart from the e-government task force, there were plans to set up a government entity to manage the e-government initiative within the next months of the project that collaborates with the consultancy firm. There was also an ongoing analysis of where to position the major hardware for the e-government infrastructure. (Arabian Business January 28, 2001).

EDS devised a strategy for the implementation and management of the e-government initiative that included a conceptualization of the institutional structures for e-government. The institutional structures were designated for three main areas. First, there was the objective of high level monitoring and management of the e-government project, which eventually materialized into the e-government executive team council. By 2001, there were two other institutional structures that were subsidiary to the executive team council. One structure was designated for the development and management of the information infrastructure that connects public sector organizations, which is the



Government Information Resource Planning Department (GIRP) at the Ruler's Court. The second structure was the Dubai e-government unit (referred to as DeG), which was designated for the management of the web portals and web content, legal issues such as outside contracts and media relations. The following is a brief description of the institutional structures and their objectives.

The executive council<sup>8</sup>, (at the time of fieldwork in 2006 and 2007) consisted of 14 members that work in the public sector, half of which have IT expertise and the remaining seven specialized in different fields of the public sector. Currently, the formal role of the executive council is to formulate and implement local regulations and laws, prepare development plans, and monitor the performance by the government departments.

The head of the executive team was H.E. Sheikha Lubna Al-Qassimi who became the Minister of Economic Planning in 2004. The members of the executive office visited several countries from around the world to gain insight on e-government projects in countries such as Britain, Malaysia and Singapore (Former manager in DeG; Sethi & Sethi 2009). From the outset, the members were aware that not all of these projects would fit with the reality of Dubai's public sector (Sethi & Sethi 2009). In the early years, the executive office was responsible for formulating the strategy for e-government, and the vision and mission for DeG (Al-Shair, eGov Monitor, August 2005). The strategy included 5 areas: operational, organizational, financial, information technology and legal (Bastaki and Okan, 2005). (A model of the strategy is presented in Appendix 3)

The GIRP department was responsible for the set up and management of the technical infrastructure for the e-government initiative as well as house shared resources for public

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<sup>8</sup> The references from articles and interviews refer to the executive office in different ways as the e-government committee, the e-government taskforce and the executive e-government team council. Perhaps this has to do with the translation of the committee's name.

sector organizations to use such as an ERP system. The objective was to connect public sector organizations, provide Internet connectivity and Internet-based public services over this network. The network is the backbone that connects public sector organizations, the main e-government portal and the Internet. By October 2001, the GIRP department and the IT Company NCR completed the implementation of the communication, security and networking infrastructure. The infrastructure was known as the Government Information Network (GIN) and was described in media reports to be completed in record time (AMEinfo October 2001)<sup>9</sup>.

The DeG office, and more specifically the eServices section of DeG, was the central government unit responsible for the planning of the web portal and web content of public sector. DeG provided e-government frameworks and standards for public sector organizations to follow. The mission of DeG was stated as ‘To achieve a virtual government through provisioning of high-quality customer focused eServices for individuals, businesses and government departments and to promote eServices adoption through customer management’ (Lootah and Geray, 2006). DeG was comprised of a management and an IT side to work (Management Consultant at DeG). The eService division’s activities include the set up of key performance indicators<sup>10</sup>, communication with members of the public sector organizations through presentations, and the set up and the provision of access to systems and applications (referred to as synergistic services) to public sector organizations and media relations. For example, one of these synergistic services includes a payment system (ePay) (Arabian Business May 2005).

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<sup>9</sup> The e-government portal was officially launched in October 2001 with 14 services on offer and each public sector organization operating its own website and providing online services (Al-Shair 2003).(Ameinfo 2003).

<sup>10</sup> In an interview with a former member of DeG he explained how the executive office worked on the idea of an excellence program in the public sector and that they developed KPI’s for each department.

Table 5.1 An Overview of the Institutional Structures for E-government in Dubai

Institutional Structures	Objectives
The Executive Office	Responsible for formulating the strategy for e-government, and the vision and mission for DeG
Dubai e-government (DeG)	<p>Promote e-government to the public to reduce physical visits to public sector organizations.</p> <p>Assist in the simplification of business processes for the development of online services.</p> <p>Emphasize rules and regulations to the public sector organizations in service provisioning.</p> <p>Assist the public sector organizations in transitioning towards the integration of databases across different organizations.</p> <p>Create several channels to access government services such as the Internet and mobile technologies.</p> <p>Ensure there is a single access point for government services.</p> <p>Ensure the quality of government services through service synergies and reduce waiting time to a maximum of 3 days.</p>
Government Information Resource and Planning Department	Responsible for the set up and management of the technical infrastructure for the e-government initiative as well as house shared resources for public sector organizations to use such as an ERP system

Sources: Geray and Al-Bastiki (2005), Sethi and Sethi (2009); an interview with a former manager at DeG in December 2006

The Dubai e-government initiative was planned in a way that enabled each public sector organization to develop their e-government systems independently. One of the implications of this approach was that each public sector organization had its own IT service providers and contractors (Sethi & Sethi 2009). DeG's role was to ensure that standards are adopted across these organizations and to offer common service applications for them to use. This approach was called the hybrid strategy.

Therefore, the early stage of the e-government initiative was a time when DeG worked on developing standards and frameworks for all public sector organizations to adhere to. An interview with one of the management consultants at DeG's eServices division provided some insight on the process. DeG conducted benchmarking with e-government initiatives from other contexts, which included the US, UK, Taiwan and Singapore. The benchmarking activity involves reviewing reports on these initiatives and information collected during meetings with delegates that visit Dubai and regional conferences. The DeG unit also had to take into account international standardizing bodies such as the W3C<sup>11</sup> and OASIS<sup>12</sup> (Management Consultant, DeG). During this early stage of the e-government initiative, DeG was keen on gaining knowledge on the area, given that there was a lack of detailed guidelines available on how to implement e-government systems on such a large scale. Even models such as the stages of growth model for e-government, which is widely noted in presentations by DeG, were found to be too abstract and did not provide a normative set of steps to follow in planning and implementation. Instead they are more useful for the description of the organization's status in implementation (Management Consultant, DeG).

DeG at the time played a dual role. It was an institutional structure that operated one level below the executive e-government council and worked according to its directives

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<sup>11</sup> W3C refers to the World Wide Web consortium which as international community for the development of web standards.

<sup>12</sup> OASIS is the Organization for Advancement of Structured Information Standards.

and adhered to its policies. The DeG also played a centralizing role that monitored and attempted to standardize the disparate web development activities of public sector organizations. DeG's centralizing role was through the provision of standards and frameworks (this included supporting them technically through the provision of access to centralized applications for web portals), and receiving and assessing quarterly reports on the progress of e-government systems implementation. For some time, each public sector organization developed its own e-government system independently and signed contracts with different IT and service providers. As a result, there were difficulties in integrating systems and providing services across different organizations (Sahraoui 2005) in what resembled a whole person approach (Margetts 1991).

One of the IT managers in DM, during an interview, discussed the lack of both integration and homogeneity in the appearance and functionalities offered in web portals. He explained how there were differences across organization in aspects such as the look and feel of each web portal, where even the authentication process that involves using a user name and password varied (IT Manager, Support Services Unit). An additional activity of DeG was to coordinate media relations to promote the e-government initiative to the public. There was encouragement for members of the public to use the online services (AmeInfo December, 2001; AmeInfo July 19, 2003).

The activities of DeG reflected an engagement and contribution to the production of a managerial discourse in Dubai's public sector. This discourse promoted customer-orientation and the introduction of international standards to ICT work that has been adopted in many other countries. The managerial sets of ideas were part of a consultant-like approach that the members of DeG adopted themselves in presentations. The researcher got this impression early on, upon the arrival at the actual office of DeG, which was located on the fourteenth floor of the Emirates Tower, one of two buildings that were around 54 floors high. The tower building had a security desk and electronic turnstiles upon entry. The offices on the fourteenth floor were modern and the interview

was held in meeting rooms with large windows that overlooked city skyscrapers, many of which were still under construction. The place resembled a modern private organization more than a central agency in the public sector. After having meetings with the manager and consultant working there, it was apparent that the rhetoric and practices of members were contributing to the generation of this managerial discourse.

It is time to elaborate on the prevalent perceptions of e-government by members of the central agency DeG. One of the interviews was with a former manager at DeG who discussed the e-government project in a story narrative. This began with some of the challenges faced during the set up of the e-government initiative and how DeG fits in the big picture. The narrative then encompassed an overall background to the initiative and how it was set up and concluded with a discussion of DeG and its objectives and activities. Even when a question by the researcher was asked during interviews in relation to the ICT staff since that was the research theme of interest, he would reply by saying 'It is good that you are shifting your focus to what you want, very good. I will get there...' which indicated that he wanted to tell the story in a particular order.

One of the apparent themes in the narrative was the concept of transformation and change management. This indicated that the interviewee perceived the initiative as a catalyst for change in the public sector (even though he mentioned that there were pre-requisites to achieve the intended change). There were several examples (or short stories) that illustrated the idea of change. For example, the interviewee discussed how some managers in the public sector started to learn using the Internet upon the announcement of the e-government project, mainly in response to the pressure to get these projects operable on time. Another example was of change management, where businesses were incrementally encouraged and prepared to use the Internet through media coverage of e-government and the provision of incentives to use the online services. Incentives took the form of rewards for having the highest number of online transactions, and at later stages through announcements that it is compulsory to use online services.

At one point the interviewee commented how e-government leads people in the public sector to question the taken for granted. In his view, things (such as procedures, practices and systems) grow organically over time and people forget why they are set the way they are. The e-government initiative was described as a catalyst to question the taken for granted, and rework processes to improve them. Overall the concept of change and transformation in e-government centred on the processes and procedures in service delivery more than any other aspect of the public sector. Ideas of adopting KPI's and focusing on customer satisfaction indicated that change involved shifting practices so that they resemble the private sector or some ideas from new public management experiences in other countries.

The e-government initiative was presented as a positive contribution to support the running of the city as the influx of people is on the rise and there is pressure on different public sector organizations to cope with this. The interviewee explained that e-government was more than implementing an IT project, since it requires communication activities with other departments and members of the public to promote the initiative and build awareness about it. There was also a discussion of using a combination of incentives and coercive mechanisms to promote the use of online services. The interviewee emphasized the role of leadership that played a pivotal role in making things work. For example, as DeG members work with other public sector organizations, they explain to them the importance of the agency's central role, which is needed to meet the objectives set by top officials who sponsor the project.

The former manager at DeG reflected on his own role and explained that he was interested in taking part in such a large-scale project when it was first announced. He viewed himself as part of something that was being institutionalized over time and organically grown. DeG and the other branch GIRP were both based on proposals by a consultancy firm EDS, whose planning role was subsequently taken over by these new institutional structures after a while. The structures were based on ideas from the

consultants and from the executive task-force committee who visited several projects in different countries to learn from their experiences. The former manager at DeG commented how it was not 'plug and play' given differences in context. He suggested that the several entities involved in the project (perhaps this also links to the federal system) led to challenges in running the initiative, particularly since the two branches were located in different places.

In a discussion of the actual activities of DeG, he also highlighted some aspects of his role. He explained that there was an emphasis on working with departments and communicating with them. These activities required being diplomatic with members of other public sector organizations. He commented that there were times where they (the public sector staff) were not happy with someone intervening and telling them what to do. His role also required studying these various organizational contexts to learn about the organizations' operations, since they are always perceived as foreign. Out of the experience of working with these organizations, several of his ideas on the centralized applications were taken up and this was a source of pride. He also emphasized that the knowledge of the public sector staff is sometimes invisible or overlooked when compared to the impressive reputation of multinational consultancy firms.



Figure 5.2 Timeline for the National E-government Initiative

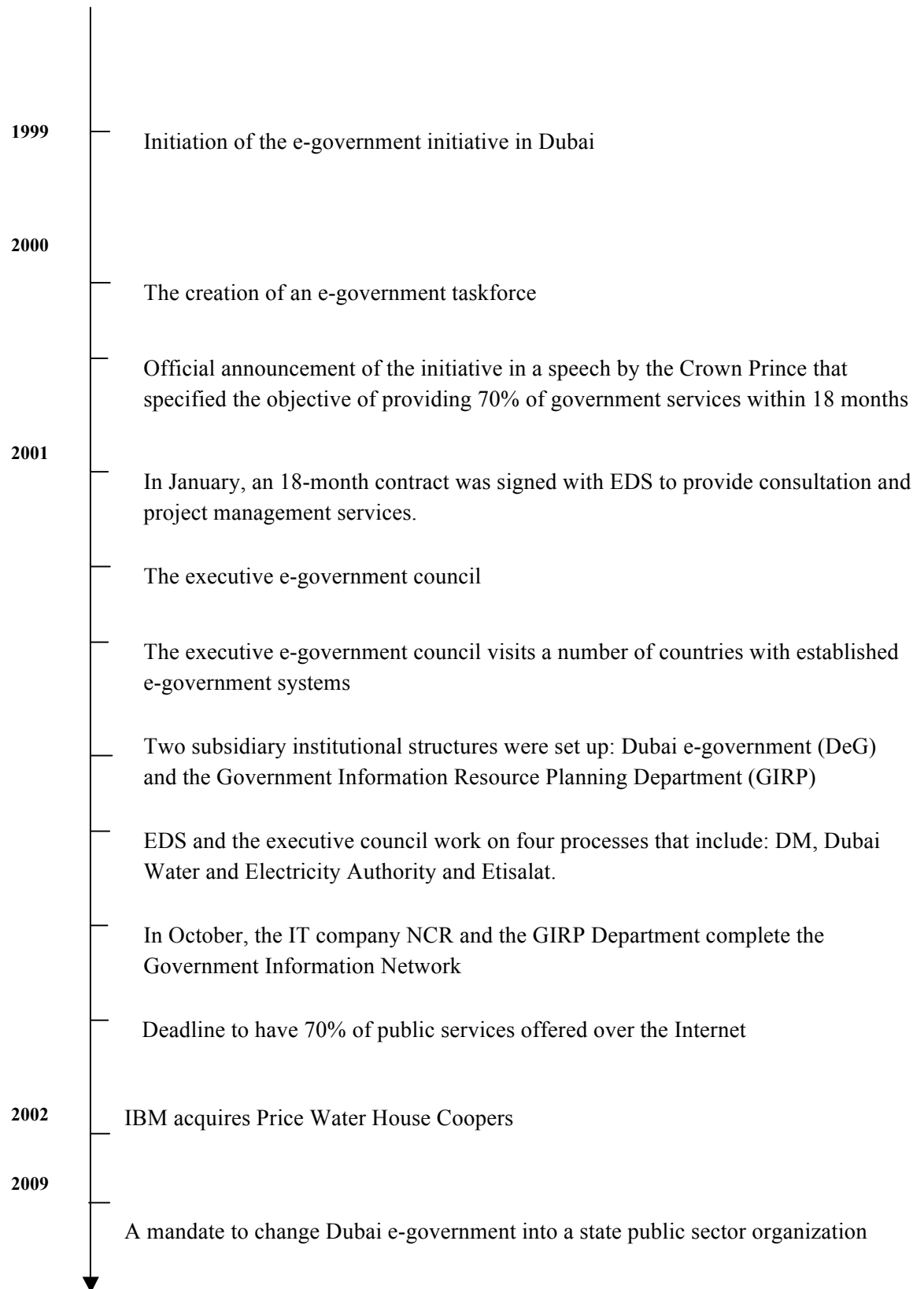
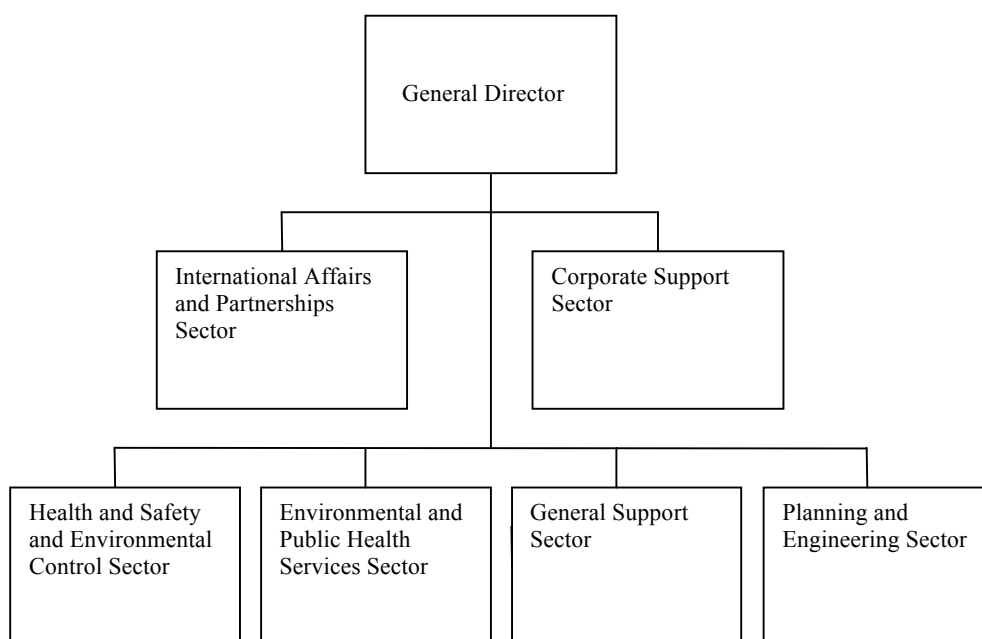


Figure 5.3 Organizational Chart for DM



Source: [www.dm.gov.ae](http://www.dm.gov.ae)

Table 5.2 Organizational Roles in E-government

<b>List of Positions in the E-government Section</b>	
<b>E-government Section in the IT Department</b>	
	Head of the E-government Section
<b>Strategic Planning Unit</b>	
	Head of the Planning Unit
	Business Analyst
<b>Support Services Unit</b>	
	Head of the Support Unit
	Technical Support Officer
<b>Service Development Unit</b>	
	Head of the Development Unit
	System Analyst
	Senior System Analyst
	Developer

### **5.3 An Overview of the Implementation of E-government: Early Activities and the Development of a Strategy**

Dubai Municipality (DM) is Dubai's largest public sector organization that is engaged in numerous activities, some of which include: urban planning, environmental protection, conservation of parks and the monitoring and evaluating of building materials and consumable items.

DM has experienced significant organizational growth and has a long history in the provision of public services from before the formation of the federation of the UAE. The important historical role of DM is evident in the fact that its old premises have been converted into a museum. DM was set up in 1957, in response to demands of an institutional structure to manage the activities outlined in a master plan for the development of roads and a town centre. Initially DM consisted of a small office with a few staff and was supervised by the city council, whose members were drawn from the ranks of leading merchants. Since the discovery of oil, the number of staff and organizational activities has continued to grow.

Currently, DM's staff is around 15,000 with 32 organizational units. There are approximately 500 services on offer. DM's organizational structure consists of six sectors. The IT department, which is the focus of this research, is part of the corporate support sector. DM has been working on the e-government initiative since 2000 when the state mandate was announced. Figure 5.2 presents a timeline of events for the development of e-government and institutional structures of the state.

### *An Engagement with Web-based Technologies*

DM was leading the way in the development of e-government systems, compared to other public sector organizations. In 2000, the executive e-government team and EDS worked on four selected processes that involved Dubai Municipality, Dubai Water and Electricity Authority and the national telecommunication company Etisalat (AmeInfo December 10, 2001; Arabian Business January 28, 2001; Arabian Business October 31, 2001). From the early assessment stages that the executive e-government team and EDS conducted, it was apparent that DM was one of the few organizations with a strong technical infrastructure and an existing presence on the Internet (Sethi and Sethi 2009). The processes that the executive team and EDS worked on early on represented government services that required input from more than one government entity. These complex processes were: trade license, health cards, and certificates of no-objection, bill presentation and payment. They were chosen for their significance to the public and business community, especially since the manual process was considered to be time consuming and cumbersome.

DM's presence on the Internet represented a modest beginning. One of the IT managers described the initial use of the Internet in retrospect. He described how in 1998 his colleague came across the idea of using the Internet for public services at a conference, and called him to plan a similar project. The IT manager described the excitement that the idea generated, and how he postponed his planned leave of absence to work on planning the IT project. The IT department did not have enough qualified experts at the time to work on the use of web-based technologies. Therefore, a contract was made with an IT service provider to develop a website, and the product was a static website based on FrontPage software. This website published information and news together with a separate web-based application that enables members of the public to download and upload forms. This modest system ran for less than two years, until the new e-government project was initiated.

### ***The Development of the E-government Committee***

DM's response to the announcement of the e-government initiative in 2000 was to set up an e-government steering committee. The e-government committee consisted of IT managers and members from different departments since they were all to be involved in the planning of e-government. The committee realized that the project involved considerable expertise and effort to attain the objectives within such a short time frame. There was not enough time to learn and implement the project. Therefore, a decision was made to work with a consultancy company with international experience in such projects. A contract was signed with the multinational management and IT consultancy firm Price Water House Coopers (PWC) to provide assistance in developing a strategy to plan and manage e-government (Former manager of the e-government section). The large size of the project, and the state mandate to develop a web portal and provide 70% of government services over the Internet within the time frame of a year and half, meant that the existing modest website and web-based application had to be scrapped (IT Manager from the Support Unit).

The discussion between the consultants and the e-government steering committee led to the formulation of the kind of e-government system they aimed for, which included themes such as: integration of systems across departments and a focus on public services that are provided to the public (as opposed to internal processes and workflows). The consultants' study was presented to a number of staff and managers and defined e-government as '...a new emerging operational model where government institutions use the Internet to deliver various services to the public, their own employees, business partners, suppliers, other governmental organizations, the private sector and other external foreign entities.' (PWC July 2000).

The management consultants' presentation also included an overview of the initial study they conducted and its findings. The presentation included two management models. The first model was the e-government maturity model that presents the different stages of e-

government. The model shows the first stage of an online presence and depicts the organization as progressing towards the organizational transformation stage. DM was identified as being at the first stage of online presence. The second model was a matrix that measures operational readiness. The presentation positioned DM on the second model based on responses from a questionnaire sent to different departments. The results showed a low score in the four areas of the matrix: strategy, organization, process and delivery capabilities requirements (PWC presentation June 2000). This concluded with some recommendations. The consultants also presented the exemplar case of South Australia through screenshots of their e-government web portal.

Key conclusions of the study included the achievements of DM such as identifying touch points with customers, defining key terms in the strategy, technical expertise required and identifying potential impacts of e-government on procedures. The study identified several points to work on to reach the e-government target and they included (PWC presentation 2000a):

- Developing an e-government implementation plan
- Identifying risks
- Exploring opportunities that e-government creates for revenue generation
- Setting up a training plan, assessing the impact on roles
- Developing a change management plan for organizational changes,
- Reviewing and upgrading the technical infrastructure and setting up IT standards

### ***The Consultants Initial Activities: The E-government E-readiness review***

The PWC consultants' initial activity was to undertake a study to learn more about DM's departments and the public services provided, and this was one of the first steps towards developing a strategy. The study, which was referred to as the 'E-government Readiness Review', involved interviews with the staff and managers in the different departments (Interview with System Analyst, Development Unit). The objective was to learn about the requirements that each department had for setting up e-government systems, possible obstacles and the nature of pilot e-government projects some departments were already engaged in<sup>13</sup>. The study identified the target position for DM (see table 5.3), and listed the objectives of the study (see Table 5.4). The assessment was based on interviews and conducting a survey with each of the departments based on four main categories of strategy, process, organization and competencies and finally delivery capability and operations.

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<sup>13</sup> Some departments had already set up pilot e-government systems at the time such as the no-objection certificate, health certificates and revenue collection (PWC presentation June 2000).



Table 5.3 Key Ideas in the E-government Readiness Review

<b>Target Position</b>
<p>Electronic Integration</p> <p>E-government to cover all departments and sections</p> <p>Focus first on the provision of services that target the public</p> <p>Continuous improvement of services</p>
<b>Objectives</b>
<p>Use experiences of other leading public sector institutions</p> <p>Attain an understanding of where the organization stands</p> <p>Engage all departments in planning and implementation</p> <p>Raise awareness of e-government benefits</p> <p>Share experiences from working with other public sector organizations</p> <p>Identify key challenges and constraints to reach target</p>

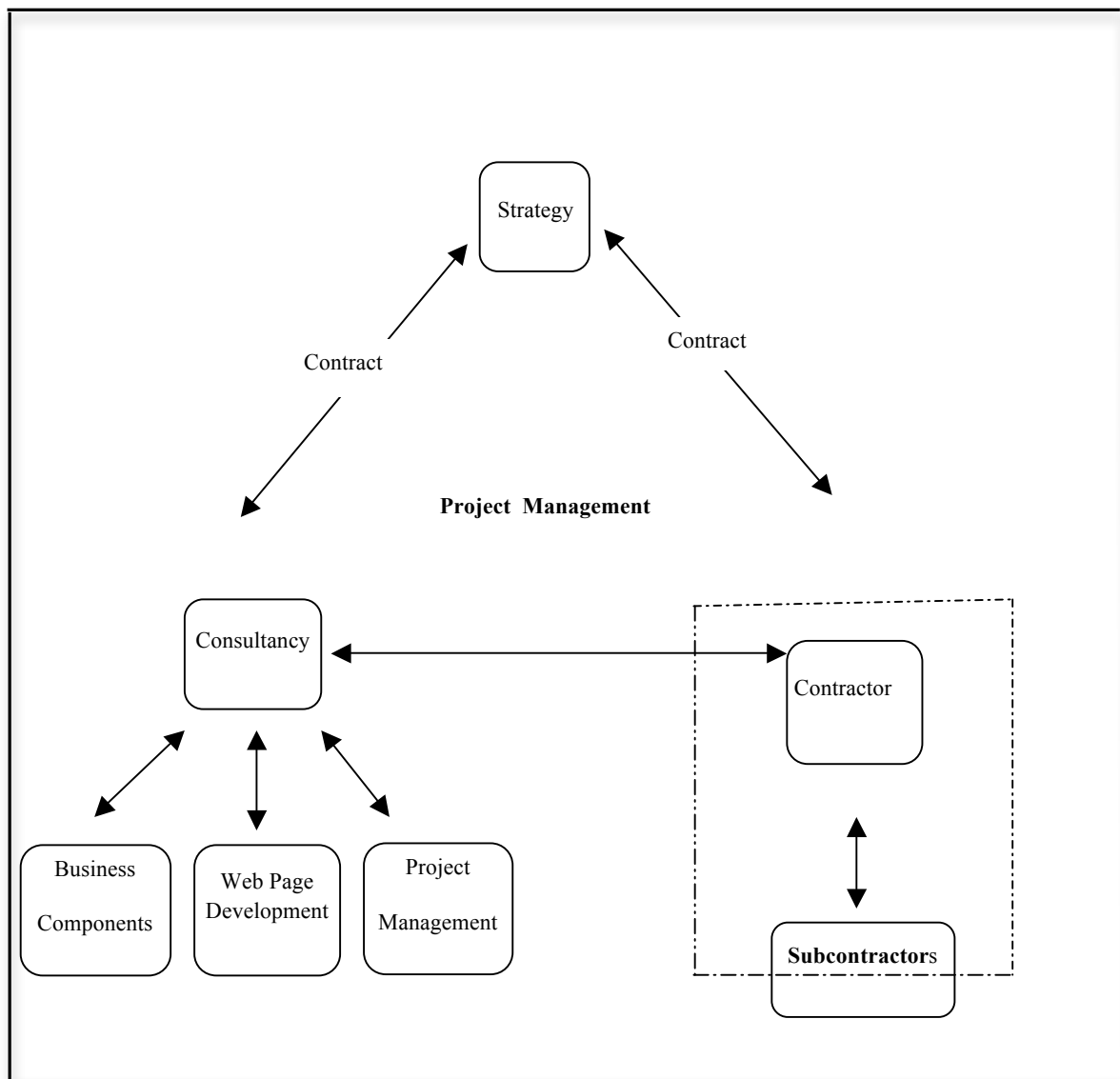
Source: PWC presentation July 2000

Table 5.4 An Overview of PWC Presentation for the E-government Strategy

<b>Date</b>	<b>Theme</b>	<b>Key ideas included</b>
July 2000	E-government Readiness Review	Objectives Criteria to Conduct the Review Results Challenges
August 2000	Recommended Implementation Scenario	Implementation Scenario for project management Benefits of this scenario Timeline for project management
September 2000	E-government Vision	Structured Approach to develop the e-government vision An overview of 3 phases for implementation term Timeline for implementation
October 2000	Service Implementation	An implementation plan for phases 1 and 2 Objectives of each phase
July 2001	Change Management	Case Studies Change Management Framework: initiation, definition, transition, improvement

Sources: PWC presentations July 2000, September, October, August and June 2001

Figure 5.3 Project Management Strategy



Adapted from PWC presentation 2001

### ***Organizational Changes***

The work on the e-government systems commenced before the establishment of a specialized e-government section in the IT department. The e-government section was based on the consultants' conceptualization of the organizational changes needed to develop and manage the project. The section included three units<sup>14</sup>: e-government strategic planning and design, e-government service development and finally e-government support services. A document of job descriptions for the roles in each section was created to depict the way work was to be organized and managed within the newly formed section. The e-government section cooperated with the other sections, which were the system development section, office automation section and operations and networks section (Arif 2008).

The Strategic Planning Unit was responsible for studying and analysing e-government systems, developing methods to develop systems and technical specifications, as well as managing tenders for projects. The Service Development Unit was responsible for the development of websites, and applications for online services and databases. This involved preparing technical standards and implementing them. The Support Services unit was responsible for post-implementation support of the e-government systems for internal and external users. This involved monitoring and upgrading the e-government systems whether they were purchased or built in-house (Arif 2008).

The Service Development Unit conducts two main tasks. The first is the development task, which is the coding of applications for online services and technical testing of the code. The second task is the analysis activity to see where a problems lies. Another activity that the Development Unit works on is the deployment of code scripts where they send them off to the Internet unit for production on the live environment. This is

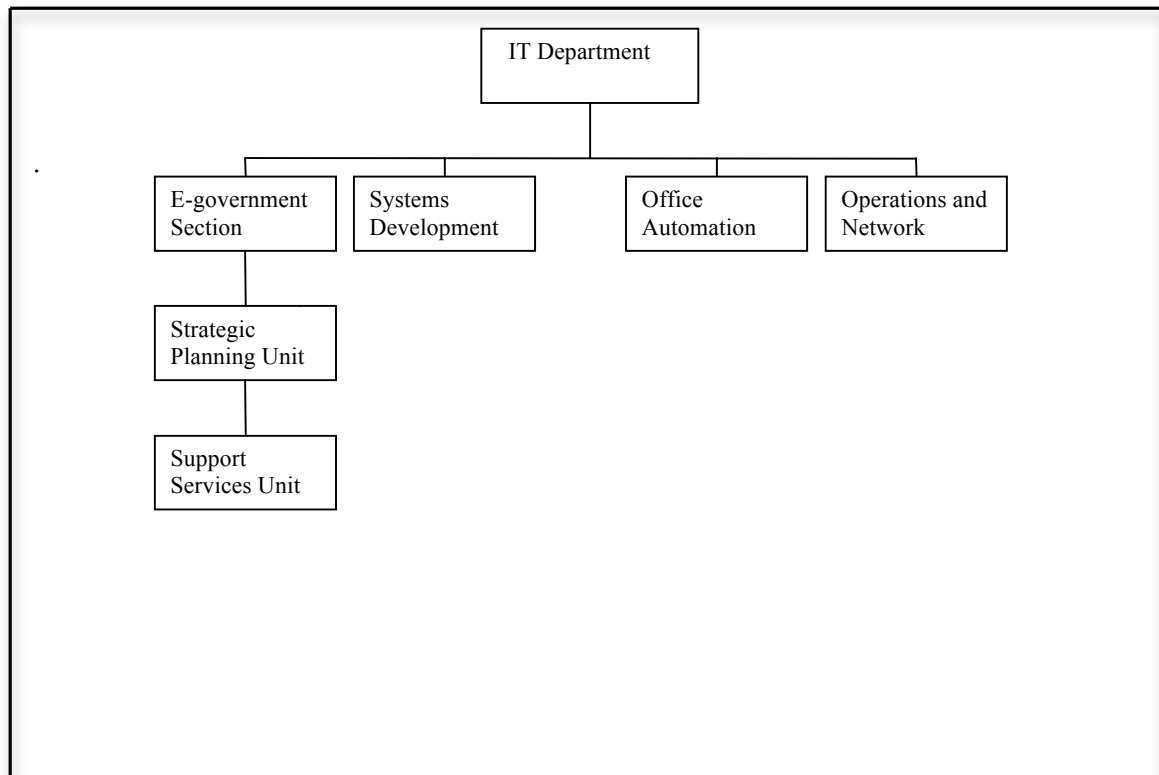
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<sup>14</sup> Initially, the e-government section included the service development and support services units only, at a later stage the strategic planning unit was created. There were several positions created that were unfilled until later stages in these units.

after the service custodians conduct the user acceptance testing to see if the application met their initial requirements. An additional activity is providing technical standards to the development section that work on a back-end system that is moving towards additions of an interface to become an e-government system (IT manager from the Development Unit).

The Support Services Unit conducts several tasks such as meeting with customers, as well as acting as service custodians that are responsible for managing the process of developing an online service. They are involved in collecting requirements for developing an online service or enhancing an existing one. Finally, their role also includes supporting internal and external users that use the online services. One of the support officers described the support unit as being in the loop from A to Z, so that they always know what is going on.

Figure 5.4 Organizational Chart of the IT Department in DM

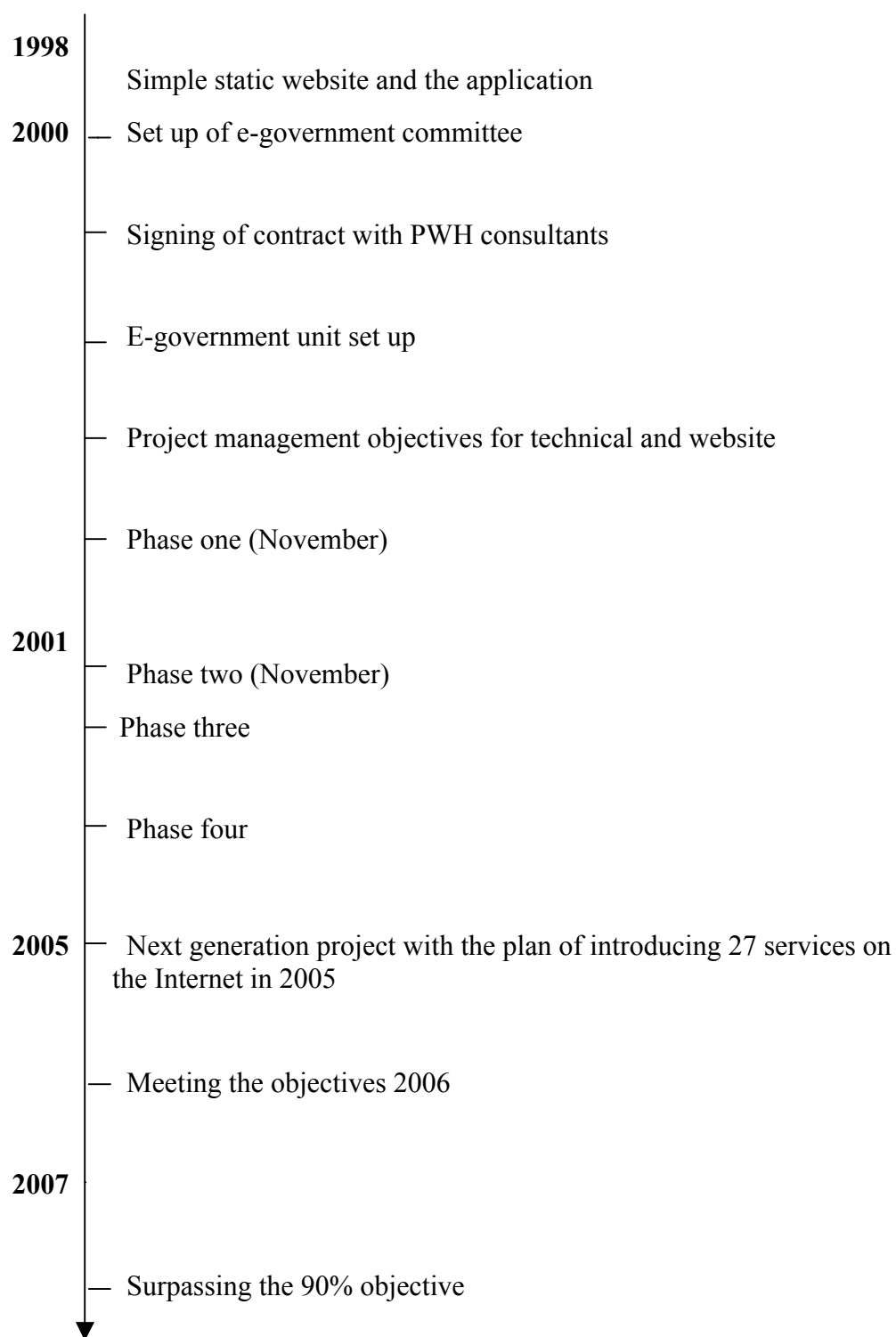


Source: Arif (2008)

Table 5.5 Organizational Roles in the E-government Section

Roles
Head of the E-government Section
<b>Strategic Planning Unit</b>
Head of the Planning Unit
Business Analyst
<b>Support Services Unit</b>
Head of the Support Unit
Technical Support Officer
<b>Service Development Unit</b>
Head of the Development Unit
System Analyst
Senior System Analyst
Developer

Figure 5.5 Timeline for the Implementation of E-government Systems



*Multiple sources: Interviews, PWC presentations 2000-2001*



### ***Stabilizing the Organization***

The e-government strategy focused on developing a number of services over four stages<sup>15</sup>. The selection of services to be developed for the web portal and the decisions on when they are to be developed was referred to as a process of service prioritization<sup>16</sup>. This process was mainly based on two criteria: visibility of services to users, i.e. services that are often used, and simplicity. The services do not require input from more than one public sector organization (PWC presentations 2000b, 2000c, 2000d; 2001; Arif 2008).

The objective of phase one was to raise visibility of DM to the public as a leading service provider by setting up 13 online services that were easy to implement in a short period of time. These simple services do not require working with organizations outside DM and thus involve low risk for the support team. The objective of phase two is to focus on important transactional services this phase; as such 14 services were chosen. These services enabled users to upload information and conduct payments and they required inter-departmental cooperation. The main focus was on services that are of value to the business community. Phase three was concerned with services that have a high value and target internal efficiency; there were 11 of them that were chosen for this. To meet the objective for October 2001, 18 online services were developed which spanned phase one and part of phase two (PWC presentation).

In a presentation in June 2001, after the technical infrastructure was set up, a project organization structure was developed. It included four teams that operate under the joint management of the e-government steering committee and PWC. The teams were: delivery, security, security, and infrastructure and project administration. During the first phase the plan was to include around 10 analysts from PWC with expertise in system

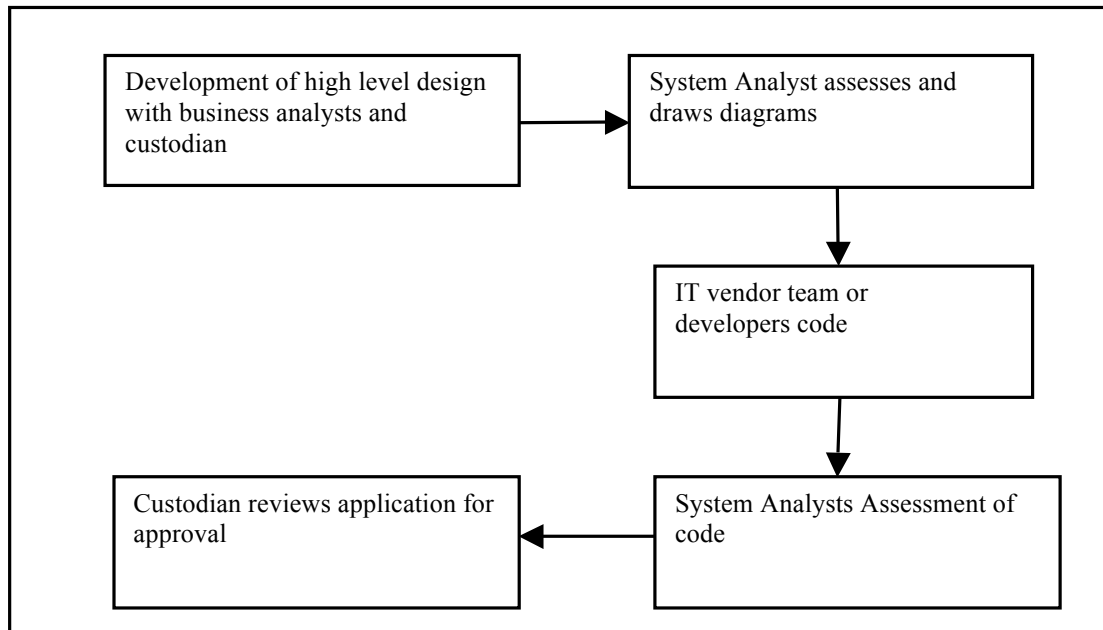
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<sup>15</sup> The stages of implementation were referred to in presentations as waves or phases. These stages later became four as the national objectives for e-government became 90% of all government services.

<sup>16</sup> The process involved four steps by DM management: reviewing the business plan for DM, identifying high value services, collecting information and statistics on services, determining when services are implemented based on their visibility and complexity (Talhim and Arif).

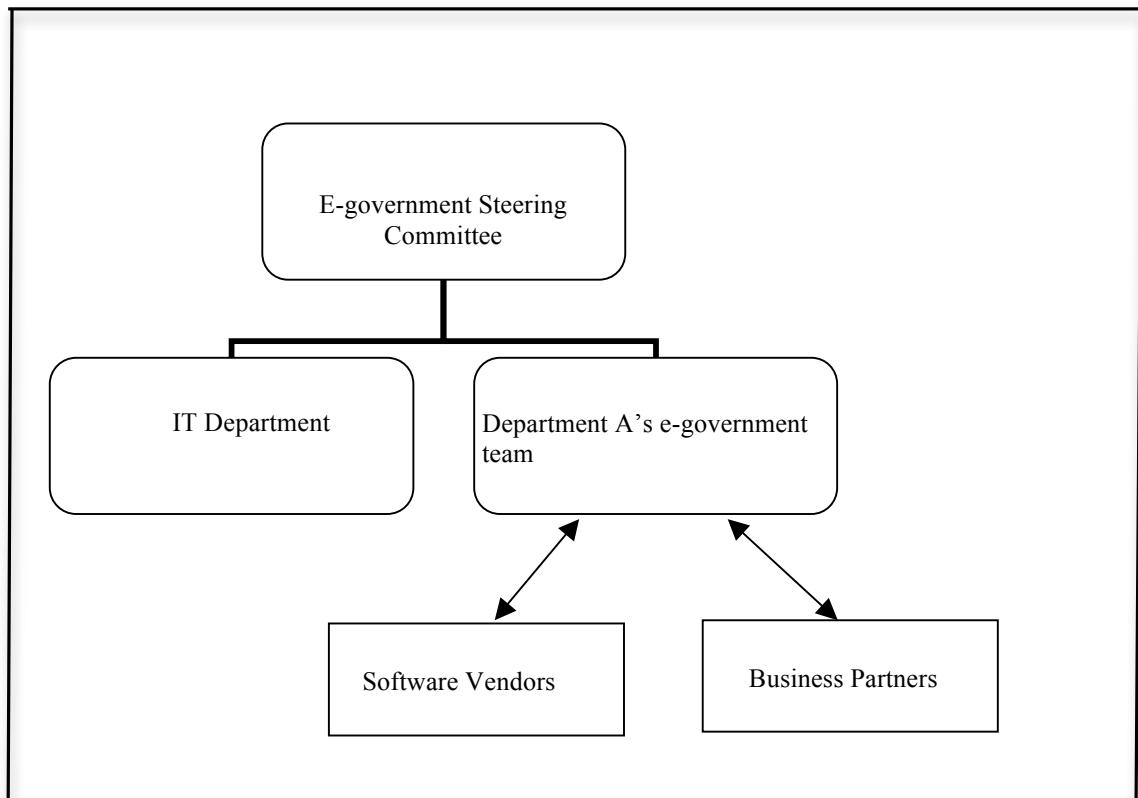
analysis, development and security. Other actors involved included the IT vendor as well as representatives from the e-government steering committee and ICT staff from DM (PWC presentation July 2001).

Figure 5.6 Process of Developing Applications for Online Services



Source: PWC Presentation July 2000

Figure 5.7 The Organization of Work on E-government



Source: PWC Presentation July 2000

## 5.4 Online Service Development Process

The process of designing and maintaining the e-government systems involved a number of steps. First, meetings were held with members from departments to collect requirements. The meetings include members from the relevant department, the business analysts from the planning unit, service custodians from any of the units in the e-government section, and finally members from the IBM team (who were the IT service providers that worked on developing the online applications). The design of the application is then sent to the system analyst in the Development Unit who creates a diagram to prepare for the coding activity. This diagram is sent to the developers for coding (IBM team or ICT staff programmer), and the code is then tested to see if it technically works by the system analyst. If the application operates then it is signed off and sent to the custodian for the user acceptance test (UAT) to ensure it meets requirements. The Development Unit then sends the code to the Internet section for production on the live environment.

The process of maintaining these systems required the service custodians to meet with departments who request enhancements. The decisions made in the meeting are then communicated via the software application Support Magic<sup>17</sup> to the developers. They contact the Internet section to recall the application. The changes are made, tests are conducted and then the application is deployed once more on the system. Thus the ICT staff in DM and its partners from the private sector needed each other to get the process to work.

The collection of requirements was not a straightforward task and it included meetings and negotiating with members from other departments. The main challenge faced in the collection of requirements was that the custodians did not always know what it is they

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<sup>17</sup> *SupportMagic is a customer interaction management tool. SupportMagic includes a communication platform that can be used to document customer problems, and then post issues for troubleshooting by the Support Services Unit team for the developers in the Service Development Unit to work on.*

want from the online system, and this sometimes included unrealistic requirements. Another problem often the ICT staff faced was when the users notified them that the systems developed do not meet their expectations. This meant that they have to rework the systems again according to the custodian's feedback (IBM consultant).

The planning unit acquired newer dimensions over time. The planning unit was set up in the later stages of the project. Initially it was the management consultants who were playing the central role in planning. As the ICT staff gained experience, there was a move away from depending on the consultants and more towards outsourcing some of the IT projects to service providers. The planning unit used managerial techniques such as SWOT analysis to develop plans for the e-government section. According to the IT manager from the planning unit, the plans involved several sources of information and stakeholders such as the government policies, objectives and the requests made by different departments for online services.

The planning unit also collected information on international trends in e-government from websites and published case studies. All of these sources guided the planning process and shaped how ICT work was conducted. As the project progresses, the ICT professionals described the changes in themselves and how they were learning from a reality of work that differed from the neat conceptualizations of the consultants. Initially, the ICT staff was open to learning since many of them had the aspirations to take part in a major project. The e-government project was considered as more exciting than the traditional ICT professional role in the public sector (IT Manager from the Support Services Unit, IT Manager from the Planning Unit; Support Services Officer).

### ***Phase One***

There were four phases of the implementation of the e-government project (A summary is presented in Table 5.6). The first phase of implementation began in November 2000. Some of the online services were already developed and provided over the Internet, and

the focus was on developing applications for another 14 online services. The nature of the development process was characterized with speed in order to meet the objective of setting up an operable e-government system with a total of 18 online services by October 2001<sup>18</sup>. The aim was to get the technical aspects of the project completed quickly. Once they are implemented and mastered by IT department and its partners they can then be enhanced later, and they can move towards exploiting them and developing a strategy for newer opportunities (Manager from the Strategic Planning Unit).

The development of online services for the e-government systems necessitated the coordination of work between the consultants, departments, ICT managers and staff and the IT service provider team. The ICT staff and their partners from the private sector needed each other for the organizing process to work. According to one of the managers in the e-government section, they could not afford to be too demanding on how the systems were being developed and on the output. They needed the guidance of the consultants given that they lacked expertise and enough human resources to get the project running. This meant that they could not say that certain aspects were wrong, since their main goal was to complete the project on time (Manager from the Strategic Planning Unit). At the same time, the IT service providers IBM also explained how they needed the ICT staff in DM. Even though they have enough technical expertise, they needed the staff to accompany them in meetings with departments, given their knowledge of how the public sector runs and the rules and regulations that they have to abide to (Consultant Manager from IBM).

Therefore, the fulfilment of roles by the ICT staff in the e-government section took the form of adherence to what was prescribed in the e-government strategy and the project organization structure. This was to learn from the multinational consultancy team's expertise and to meet deadlines for the project. There was also an effort by the IBM team to fit in. This meant coming in on their holidays which were not official state holidays in

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<sup>18</sup> The deadline of October 2001 completing phase one and part of phase two of the project.

the public sector, or coming to the working hours in DM that start earlier than their own working hours (Consultant Manager from IBM).

By October 2001, 18 online services were running on the web portal. The deadline was met successfully, but the ICT staff found several bugs in the e-government systems and they were having problems in debugging. This occurred due to the lack of adequate documentation. As a result, members of the public often reported problems in the web portal to the services unit, who in turn would place 'issues' on the Support Magic software application to inform the development team of problems. The early stages of the project involved working with a legacy system that aggravated the problem of bugs in the systems even further (System Analyst, from the Service Development Unit). Any problems in the systems were a source of stress for the development team given that it was an initiative that was under the spotlight.

One of the managers discussed the early stages of the project in retrospect, describing how there was a high dependency on the external consultants. He explained that there was a sense of relaxation when it came to planning because of that dependency on the team of experts. Therefore, there was a lack of clear procedures and quality standards, reporting systems and software development processes. He explained how these aspects were not very significant during the early stages of the project, and how eventually with time the standardization and documentation procedures were introduced and institutionalized. In his opinion, the fact that these procedures developed over time reflected the organizations' maturity in working on the project (Manager from the Strategic Planning Unit).

The problems in the operation of the e-government systems continued into the second phase of the project and represented a source of concern for the ICT staff. Particularly, since the IT service provider team changed staff at one point and did not leave enough

documentation to support the systems<sup>19</sup>. During interviews, an IT manager from the Development Unit reflected on the performance of the IT service providers during that time by stating that they were coding directly and not following a structured methodology. She went on to explain that it was as if they were learning to work on the development of the system along the way just like them. She explained that they were not leading the way as had been anticipated from a company with international expertise.

### ***Phase Two***

In an attempt to resolve the problems in the systems, there were some informal negotiations that took place between staff in the Development Unit. One of the ICT staff drew upon his experience of working as a developer in one of the industrial plants in India and the techniques adopted there to ensure quality standards. Based on his experience, he developed a prototype of a code template that ensured that the coding process follows a structured procedure. A documentation checklist was created so that the IT service providers create adequate documentation for the systems developed. A prototype was used to showcase the template and checklist to the management team in the e-government section, who in turn agreed on adding the artefact to standardize the procedure of developing the e-government systems. Eventually, other sections in the IT department began adopting the code template and checklist for other software development projects. There was a sense of pride that was exhibited by the ICT staff during interviews when discussing their local innovation of the template and checklist and how it contributed to the e-government systems

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<sup>19</sup> Interviewees commented how the IT vendor company acquired the consultancy team. The takeover took place in year 2002. It is not clear whether the team from the IT service provider team was changed because of the takeover, or it was simply a shift in staff.



### ***Phases Three and Four***

Local innovations were taking different forms as well. The planning unit discussed how they constantly came up with ideas for online services through casual discussions between ICT staff and members of the organization. During this time, the extended deadline of developing 90% of e-government systems by 2005 was reached before other public sector organizations in Dubai. Interviews with ICT staff indicated that during the third and fourth phases of the project there were significantly fewer bugs reported in the systems. The efforts of the ICT staff poured into re-writing the problematic applications that were developed in the first two phases to ensure that the systems operate smoothly (Manager from the Service Development Unit).

The next generation project was underway in Dubai Municipality, which was based on a service-oriented architecture, a new application framework based on Web Sphere technology that was provided by IBM. The objective in 2005 was to introduce 27 ‘next generation’ online services within a six-month period (Arabian Business October 2005). The motivation for the new project was discussed briefly in interviews with ICT staff and was reported in some news articles during that period. The new application framework was expected to provide flexibility, since it enabled applications to be broken down into processes that are referred to as services.

Table 5.6 An Overview of the Phases of Implementation

<b>Phases</b>	<b>Objective</b>	<b>Deliverables</b>	<b>Proposed Timeframe</b>
Phase One	Increase visibility of the project to the public by providing online services	14 services	November 2000 to October 2001
Phase Two	Develop online services that enable transactions	13 services	November 2001 to April 2002
Phase Three and Four	Implementation of high value services	11 services	---

Source: PWC presentations September and October 2000

## 5.5 Outcomes

In terms of technological developments, the e-government project was a success, since a workable e-government system was set up within a timeframe of eight years. DM reached the target specified in the State mandate a year ahead of the deadline (Manager from the Strategic Planning Unit). The achievement was announced in a press conference in November 2006 (AmeInfo 2006). The State's objective of providing 70% of services over the Internet by the end of 2005 were reached and the target was modified by the to 90% of services by 2007. At a later stage, an announcement was made in the media that all of the public services were successfully converted to online form. Indeed, the information system came a long way since the early legacy system and the simple static web site using FrontPage software and two simple applications to upload forms to operable e-government systems that offer integrated services with other departments. The applications for the website were developed based on an increasingly flexible approach of collecting requirements from the people who work within the organization. However, given the speedy pace of development to meet the deadline there was an inevitable messiness to development that included mistakes and workarounds that came to comprise the systems.

As is the case with most newly developed systems, there were several bugs found in some of the applications for the web portal's online services. These bugs created some breakdowns and problems in the operation of the system and in the delivery of online services, which in turn created some pressures on the support and development teams. The problems in the development process occurred mainly during the early phases of the project. There were several challenges encountered in the collection of requirements, learning to work on the new project, the inadequate documentation provided, and changes to the team of service providers. Later on, many of the bugs in the system were resolved through the local innovation of a coding template and

checklist. These were created mainly in response to problems in the systems in order to manage the development process and to ensure that all of the applications are coded and documented in a standardized way. The coding template and checklist became part of the development process for the future and were even used to revise the coding of older and problematic applications.

By the time the fieldwork came to an end, there was a new system platform being deployed for e-government that was based on Web Sphere technology. The motivation for adopting the new platform was to create modular components for the e-government system to ensure their flexibility and to be able to accommodate future changes in public services and new projects. For the people working on these systems, this involved considerable efforts to learn to work on the new platform. The new project involved developing applications for online services incrementally and according to the new platform.

The standardization and quality procedures adopted for the system were also developed further. At a state level, this involved establishing central agencies to monitor and evaluate performance and provides key performance indicators. Within DM these KPI's were introduced and they learned from the private sector's practices and they developed standards of their own to improve the development of the systems. Examples of these standardization procedures include: the adoption of guidelines from international organizations, enrolling into their competitions, and introducing the local innovation of the coding template and checklist to help control the development process. Web Sphere, the new technology that supersedes the project studied here, is again a technology that is new and which very few people have expertise to use and manage. And so the cycle of setting up online services for the web portal resumes.

Other significant outcomes include several local, regional and international awards received for the organization's achievements that are presented on the web portal. These achievements in the e-government domain created a positive reputation for the organization among the public and private sector organizations. For example, during an interview, a manager from Microsoft commented how DM were the superstars of the initiative and was impressed when I told him I was focusing on them as a case study.

Another outcome is related to new relationships with central government organizations. The state mandate and institutional structures for e-government represented a powerful force to enforce the international best practices and reach objectives, yet there were several organizational challenges encountered. As the case study illustrated a precursor to integration was re-engineering of work processes and that was a challenge given that they are based on legislation and regulatory requirements. The interviews revealed that the situation couldn't be compared to the private sector, since re-engineering is a complex process that requires negotiations and interventions that are beyond the business models.

As indicated in several interviews, there are many challenges encountered in planning the inter-organizational systems. For example, one of the issues that propped up in the early stages was deciding on who was fund the development of the inter-organizational systems since many departments were collaborating to set up the systems. There were also difficulties associated with institutionalized practices and norms that affected cooperating on these projects. As noted in interviews, some managers from other public sector organizations were too busy to engage in such a complex project, particularly since the e-government initiative was at its infancy. An additional issue was that there were different sets of priorities for members taking part in these projects. There were also institutionalized ways of working that were distinct for each department and a sense of ownership of the information they have.

The grand scale of the e-government initiative necessitated the creation of centralized institutional structures to monitor and manage the implementation of these projects. This arrangement was inscribed in the newly developed system. The hybrid strategy implemented by DeG is illustrative of such changes to inter-organizational networks. DeG provided centralized services such as a payment portal to all government departments. At the same time, the strategy allows each department to independently develop their own online services based on their own needs. This hybrid strategy that involved both centralization and decentralization was implemented successfully as the case study shows us.

The independence of each government department in developing their systems and with different service providers created issues of integration in later stages of the initiative. As Sahraoui (2005) points out, the current hybrid strategy has created infrastructural challenges particularly for the subsequent initiative of integrating with the federal e-government system that is part of the UAE strategy for the public sector (UAE Cabinet 2011). The e-government systems across all departments have been developed in a relatively independent way across departments, following guidance and key performance indicators of the DeG. Yet, integrating with a federal system posed even more infrastructural issues. The issue of integration was reflected in many of the minor problems of standardization. Each of the departments has a different look and feel to websites and authentication procedures.

One of the most apparent organizational changes that occurred is the inclusion of the private sector companies in the development and management of the e-government systems. The momentum for setting up advanced systems requires expertise of management consultants and IT service providers who introduce international best practices and strategies to implement such projects. As these e-government systems grow and changes are required, the involvement of the private sector will naturally intensify. Their experience and tacit knowledge from working in DM gives them a

significant position in the arrangements for ICT work in particular. There are parallels to the situation in European governments that are now locked into relationships with companies from the private sector through years of working on IT projects with them. These patterns are discussed by Dunleavy *et. al* (2001) points out, working with IT companies in the public sector of many countries in the EU has become institutionalized given contract relationships and the breadth of experience they have gained from working with them.

Both the central agencies and DM were anticipating and hoping that the take up of the online services by the public would be high; particularly since the e-government initiative was sponsored by top officials of the state and heavily covered by the media. In October 2004, when the target of providing 70% of services over the Internet was made, there was also the expectation that 50% of transactions would be conducted via the web portal (Albawaba 2005).

The interviews however indicated that there were still people who preferred to visit the public sector offices and continue using paper forms. Several IT managers explained the issue of low take up of services in terms of deeply entrenched socio-cultural norms that have not been de-institutionalized. The objective of creating convenience for the public through online services was thus challenged. It was not enough to adopt ideas that are common in the private sector and other countries with a history of new public management reform that involves the private sector. Ideas of the 'customer' and 'satisfaction' were certainly introduced by the central agency DeG and the private sector that was involved in the project, but this could not guarantee that they will quickly be socially embedded.

There were also evident changes in work practices as the project progressed. The ICT staff were appropriating some of these ideas in their work practices and taken for granted norms of work. For example, during interviews the term 'the customer' was

often used to refer to anyone using the online services. The idea of ensuring customer satisfaction was also exhibited, as the developers were worried when there were bugs in the system and people have to wait for the online services to work again. This might have to do in part with the monitoring and evaluation of the system and the pressures to show positive results. But, there seemed to be extra hours of work to support the system. The efforts to innovate and improve the system performance reflected a commitment to make the system work smoothly.

Over time, the managerial concepts started to shape the way the ICT staff worked. The rational managerial discourse was embodied or present through several tools and practices. These tools include the abstract managerial models and best practices to be adopted. During some interviews there was some discussion on efforts to find these models and best practices either through benchmarking activities with the initiatives that run in other countries or information collected from reports. One justification was that there were no local models to follow and learn from and there was a need for guidance. Another justification by a manager at Cisco is that these projects have to be sustainable, measurements and metrics are needed for that. He explained that his role was to learn best practices from around the world and to transfer them to other countries.

A manager from Cisco drew three models on a paper to explain how e-government progressed over time and how it can be managed. One model included two axes, the x-axis represented customer value, and the y-axis represented stages (that range from information publishing up to transformation). The second model was based on circles that included the concepts of: customer-centric, collaboration, leadership, private-public-partnerships and empowering employees. This was drawn to illustrate the need for measures and metrics to ensure sustainability of the project. The third model was of a pyramid that was divided into three layers: the policy makers, the managers, and the platform people (or doers). He discussed how they work with people in all of these



layers. He commented that sometimes one group does not understand what the others do. He explained that some people are afraid of ICTs, and that there are others who think they understand more than any other group.

The prevalence of these managerial models was also illustrated in interviews with the management consultant at DeG. During interviews with consultants, there were several models that were presented to the researcher. One model was developed by one of the managers at DeG and was based on the criteria of: usage, e-enablement, productivity and back office administration. The model illustrates the need to prioritize the aims of the public sector during implementation and that compromises have to be made. These compromises were evident in the case of DM. As one of the IT managers from the Strategic Planning Unit commented, the quality of the e-government systems was sometimes compromised, since they were targeting speedy results. Similarly, the manager at DeG discussed the effect that the speedy approach in implementation had on efficiency and costs for the public sector.

## **5.6 Summary and Conclusions**

This chapter presented a background to the case study and the empirical findings. The chapter began with an overview of the city of Dubai and the UAE's historical and socio-cultural context. This included an overview of the political structures of the UAE and the nature of the public sector. The section then discusses public administrative reform projects and ideas of new public management in the UAE.

The chapter then presented developments that led to the formation of the e-government initiative. This included the mobilization of key actors that set the scene for significant milestones in the national initiative. The three institutional structures for e-government that plan and govern the project were described. The chapter then presented a detailed chronological account of the planning, implementation and outcomes of the e-government project in DM. This included an overview of information presented by the consultants in the form of presentations and models. As well as a timeline for implementation that showed key achievements over time. There were several models presented in the chapter that were employed to plan and manage the e-government project.

The chapter then presented the empirical findings on the e-government project over the four phases of the project. This included an overview of early activities and plans, followed by the project management and implementation strategies. During phase one, the system development began according to the consultants' guidelines. During the second state milestones were met in the development of the systems and one of the main areas of concern were the bugs found in the systems. It was during this phase that there were local efforts to resolve the problem through creating a code template and checklist. During the third phase the code template and checklist were implemented and there were fewer bugs in the system. The fourth phase was the stage that a new infrastructure was being developed based on the Web Sphere platform.

The outcomes included significant developments in the technical status of the system as well as changes experienced by the ICT professionals. The project met the state objectives before other public sector organizations. The organization also received many regional and international awards for their achievements. There were evident changes in the ICT professionals' work practices and norms, as noted in interviews, they were behaving in ways that were similar to the private sector.

Table 5.7 Main Points in the Job Description Document

Service Development Unit	
<b>Main purpose</b>	
<b>Principle duties and responsibilities</b>	
	Technical responsibility, other duties, internal contacts, external
	Contacts, work environment and physical effort.
<b>Job requirements</b>	
	Skills requirements, technical and administrative skills, behavioural
	Skills, Language skills, preferred education
<b>Recommended training</b>	

Source: Internal Document for job descriptions in the service development unit

Table 5.8 Sample of Roles of other Actors involved in E-government

Central Government Agencies	
<b>Dubai E-government (DeG)</b>	<p>Management Consultant</p> <p>E-service Provisioning Manager</p> <p>Former Manager</p>
Private Sector	
<b>Microsoft</b>	Manager
<b>Booz Allen Hamilton</b>	Consultant
<b>CISCO</b>	Manager
<b>IBM</b>	Manager
<b>Pink Elephant</b>	Consultant

## **Chapter 6: The Enactment of the E-government Systems by the ICT Professionals – A Narrative of Engagement**

This chapter presents an analysis of the nature of the ICT professionals' enactment of e-government systems. The focus of the analysis is on the micro-level perceptions, actions and interactions of the ICT professionals while working on the e-government project. These actors are seen as embedded in institutional arrangements that are part of Dubai's public sector. The chapter is organized into two main parts and a conclusion.

The first part of the chapter presents an overview of the ICT professionals' engagement in ongoing sensemaking, and the organizing process that emerges as they work on the implementation of e-government systems. Weick's (1979; 1995) concepts of sensemaking and organizing are employed. The theoretical concepts of sensemaking and organizing depict processes that include enactment as a central component. The narrative of the e-government project that was presented earlier in Chapter Five is analyzed to identify the ICT professionals' interactions and responses to significant events over the course of the project. These significant events occurred during three important time periods. The first period is the beginning of the project and drawing upon experiences and design. The second period, is the progress in the implementation of the project. The third period is the completion of the project and working on the new. The actions are seen to be part of the enactment-selection-retention model (E-S-R). As part of the selection process, the ICT professionals are seen to draw from multiple situational scripts (Weber & Glynn 2006) when encountering uncertain situations.

The second part of the chapter addresses the role of institutional influences on the sensemaking and actions of these actors. The section mainly draws on Fountain's (2001) technology enactment framework and Scott's (2001) concepts of institutional carriers and pillars. As discussed in Chapter Three, technology enactment, in this research, refers to the inter-subjective representation of working with information systems (in planning, development and management), roles, and the e-government project. In doing this, the technology enactment framework is extended with concepts of institutional carriers and interacting institutional pillars (Scott 2001) as a means to detail the nature, mechanisms and influences of institutional arrangements on technology enactment. The ICT professionals made sense of the management consultants' ideas in ways that were informed by new public management, the e-government initiative and Dubai's development model. They also encountered situations that conflicted with institutionalized ideas of the public sector and their actions attempted to resolve these issues. Their actions drew from the historical role of the public bureaucracies in socioeconomic development and from socio-cultural norms in Dubai. The chapter then concludes with a summary of key ideas.

## **Part I: A Chronological Account of E-government Project: Events and Responses**

This section presents a chronological account of perceptions and actions by the ICT professionals as they were first engaged in the implementation of the e-government project from 1999-2007. Weick's (1979; 1995) theoretical concepts of sensemaking and organizing are employed, with a focus on identifying enactments that are part of these processes. The section traces significant events from the vantage point of the ICT professionals that represent key milestones in the implementation of the e-government project. The aim from this is to analyze actions and interactions taken in response to these events. Based on the theoretical constructs, the following themes are identified in the analysis: situations of uncertainty, actions and responses taken by the ICT professionals, sources they select from to inform enactments, and finally the retained meanings of the e-government project and of their own roles.

Tracing the trajectory of enactments by the ICT professionals is significant for three reasons. First, it highlights patterns of actions that constitute an ongoing process in the formation of meanings that contributes to establishing ways of working (which we refer to here as scripts). Second, the focus on the individual and the inter-subjective processes in the implementation of e-government projects reveals the role perceptions, emotions and personal aspirations in shaping patterns of actions and the eventual outcome of the project. Third, the section presents the role of agency and the perceived 'situation' as integral to the unfolding of events. The section shows that the active selection of scripts is part of sensemaking and shapes the implementation process.

The events, perceptions, actions and retained meanings are analyzed from the constructed narrative. The constructed narrative for the e-government project is traced from 1999. The narrative represents a story, or a historical reconstruction of events, pieced together by the researcher, based partly on interviews with the ICT professionals



working on the project (Chapter Five). The narrative includes both answers to questions posed by the researcher and stories shared; it incorporates individual accounts of the project and represents a retained collective memory of what went on during those years. Narratives represent 'a compilation of actors, actions, motivations and events and outcomes' (Brown *et al.* 2008) and are the basis from which processes of sensemaking and enactment by ICT professionals are traced and analyzed.

The research findings that are analyzed thus come in the form of a historical reconstruction of the implementation of the project, and do not include detailed texts or observations of communications between actors during that period. The analysis focuses on the historical narrative, which does not capture the ongoing, interacts (single, double, triple...). Instead, what is available here is the constructed narrative as a means to explore the events, and levels of uncertainty experienced by the ICT professionals, their individual actions or interactions, shared meanings that were retained and evolved over the years of the project, and the understanding of their roles. As noted earlier in Chapter Five, the narrative account of the events and interactions that took place is presented within three periods: the beginning of the e-government project (1999 to 2002), progress in the implementation of the e-government project and continuities and discontinuities (2002-2006), and closure of the project and starting on the new (2006-2008).

## **6.1 The Beginning of the E-government Project: Design and Drawing on Experiences**

The e-government initiative was first announced in Dubai's media in 1999, and was a new concept in the Middle East region. The early stages of the e-government project were marked by two important events. First, there was the event of the initial encounter with e-government as a *concept* and its relative newness. This included the official announcement of the e-government initiative in the state media. The initial encounter shaped the lived experiences of the ICT professionals, particularly those who worked on the project early on and were referred to as 'veterans' or 'pioneers'. Second, there was the event of the arrival of the management consultants to DM who were positioned as project managers.

*Table 6.1 The E-S-R model and the beginning of the project*

<b>ENACTMENT</b>	<b>SELECTION</b>	<b>RETENTION</b>
The IT manager who was at an international conference calls his colleague to inform him of the idea of the website. His colleague expresses excitement and postpones his planned holiday to work on the project.	Previous IT experience as unexciting, lacking knowledge in Internet technologies. Information from the conference. The discourse of ICT as a modernizing tool.	Use of the Internet in work to enrich the job and for their own professional development.
The IT manager requesting to be hired on the e-government project when it was first announced in addition to his current responsibilities.	Little experience in this domain, knowledge that there are few locals with expertise in the area and that there was a gap to be filled. Announcement of e-government makes it a high profile project.	E-government as a means for professional development to work on a large project.
The IT manager observing consultants and seeing them as mentors, learning from their practices for the future.	Lack of experience in e-government	E-government a means for professional development. The role of global expertise in e-government is important.
The ICT professionals taking part in interviews with consultants, attending the presentations, identifying familiar ideas and accepting.	The official announcement of e-government, experience in DM, little experience in web based technologies.	Role of the global institution of consultancy as part of e-government, power structures playing a role, professional development.
The ICT professionals fulfilling the roles as prescribed in the new job descriptions and plans. Also playing the role of the controller of the development of applications for online services.	The official announcement plan in presentations and job descriptions, previous work in the private sector and understanding their managerial approach.	Role of the global institution of consultancy. New power structures in place.
Managers agree on working on a complex service early on even though the model of service prioritization suggests beginning with the simple ones.	Public sector experiences.	Subtle tension between the global best practices and local needs, Also IT as a rational tool to fix problems.

### ***Initial Encounters with E-government and the Projects***

The ICT professionals' initial encounters with the e-government project took place at different periods of time. As noted in Chapter Five, the E-government Section was developed in stages, and the staff were hired or relocated to the section over time. The initial encounters included the introduction to the concept of e-government, as well as finding out that he or she was hired (or in some cases relocated) to become part of the e-government project's team. The official announcement of the e-government initiative in 1999 was another important event that the ICT professionals responded to in various ways.

During interviews on the history of the project, there was often a need by the respondents to position themselves in the historical context of the project, i.e. as taking part in the initial set up of the e-government systems or in the later phases of implementation. Even though their roles in the e-government section were new, the ICT professionals made it clear that they carried with them expectations and experiences they had from working in other departments, organizations and even countries.

### ***Building on an Existing Familiarity***

The ICT professionals presented different initial perceptions of the e-government project. Some of the respondents described how at the time, e-government was a new idea and there were no local models to observe and learn from in the region. This was particularly emphasized by the consultant from DeG, when he explained that there were not enough international publications that offered clear and normative guidelines or steps to take in the planning and implementation of e-government. In contrast, there was a group of the ICT professionals that found the concept of e-government familiar. Some reported their familiarity to the concept of e-government as coming from reading about it or from attending seminars at university. Some linked it with the practical knowledge they have gained from previous work experience. Thus, the e-government project was considered

to be similar to any other ICT project from the private sector, since the underlying principle was working with technology to support activities and improve efficiency.

For example, one of the system analysts from the Service Development Unit compared the e-government project to his previous work in the telecommunications industry, where he was involved in setting up a web portal. He described working in the telecommunication company project to be more challenging than work on the e-government system given the pressures of the private sector. Another IT manager, who joined at a later stage, described how he was familiar with the concept of e-government based on his experience of developing a web portal in his previous job at a public sector organization in his home country. He commented how he was expecting the development process to be totally in-house and not based on an outsourcing model.

A different perspective was presented upon interviewing one of the former IT managers of the e-government section, who was also a national. He explained that signing up with the international consultants was the appropriate course of action to take, given that the specified deadline gave them little time to learn and they did not have enough expertise in the area of web-based technologies at the time. His initial responses towards the announcement of the e-government initiative reflected an affective dimension (Introna et al. 2010) to the actions taken in the early stages of the project. He described his emotional response that included a sense of excitement and inspiration upon hearing about e-government. He recollected how he requested to be hired to work on the e-government project, even if this meant that there would be more work obligations. This was driven by a desire to be one of the first nationals with expertise in this new area.

### ***Planning the Project***

In response to the state mandate there were various efforts to plan the project and this included the formation of an e-government committee with members from different departments. One of the committee's objectives was to include representatives from all

departments on board. According to the former IT manager from the E-government Section, there were a series of negotiations that took place during those early meetings in order to find an appropriate consultancy team with adequate experience with e-government. He emphasized how they were in need of a team of experts in the area. The idea of transformation of the public sector was central to the e-government initiative, yet there was ambiguity surrounding the concept of transformation. Moreover, they did not have enough experience or a set of methodologies (and best practices) at hand to guide the development and implementation of the systems (Former IT manager e-government section).

### ***Drawing from the Announcement and Experiences***

Several sources were drawn upon to guide their actions during the early stages of the project. One of these sources was the official announcement in the media in 1999, which defined e-government and its objective as an initiative linked to the development of the city. There was thus a sense of pride in being associated with such a high profile project. The head of the e-government section considered that the early interactions that took place were a collective response to adhere to the government mandate and offer public services over the Internet within the specified timeframe. From his perspective, implementation of the project was mainly in compliance to institutional procedures, the state mandate and regulatory requirements. At the same time, the official announcement of e-government emphasized the notion of transformation of the public sector that raised various questions. As noted by one of the former IT managers from the E-government Section, the notion of transformation was somewhat ambiguous and generated many questions in the minds of the managers working on the project: what was to be changed, to what extent were things going to change and most importantly, how?

The ICT professionals were present from the inception of the e-government project in 2000. Their understanding was often shaped by prior experiences. For example, one of

the IT managers from the Support Services Unit explained that the e-government project was similar to the earlier small and simple website in 1998. He recollected the time when he received a phone call from another colleague from the IT department who was at an international conference. His colleague informed him about the idea of using the Internet in the public sector, and he suggested that they should try to set up a similar project as well. The IT manager explained how he was very excited to hear about the idea of the website and even postponed a holiday to work on the project. The project to set up a website was developed using a FrontPage application and had required the assistance of an external IT vendor. Outsourcing the small project was necessary since the internal IT staff did not have enough knowledge on web-based technologies at the time. He was thus familiar with the idea of outside involvement.

Table 6. 2 Interview Excerpts on Initial Perceptions of the Project

Sample of Evidence: A Sense of Uncertainty Towards the Newness of E-government	
T.O.	Honestly, in the beginning, when I first heard of the term e-government, I imagined something totally different. I used to think that e-government would be more of a network, for those that transact, clients, which operates in a way (in which) they would not take notice that it was even there... In the first lecture I attended, the lecturer said that e-government should be one database. For example, from the day the person is born, to the stages of learning. All (of life's) stages (and relevant online services) are connected to each other...it was something very new in 2002, we always heard about it in the news... [] So there was enthusiasm.
H.A.	I was happy of course, it was a new direction and business type (and) it was a challenge. It is a portal and people are waiting, you have a counter... (There was also a discussion of how e-government is necessary for the changes going on in the 21 <sup>st</sup> century and the need for agility and integration, and that the public sector can use ICTs for restructuring.
S.U.	Field notes: He already knew about e-government since he worked on a similar project in his home country's public sector. He was not expecting things to be outsourced when he first came. The only difference was the cultures, which he came to understand with time.
C.N	Field notes: He worked on a small project to set up a simple static website, and at the time it was a new and exciting idea. The e-government initiative introduced a managerial rationality in the public sector that is customer oriented, changing the image of the public sector and public servants.
M.H	Look the whole Arab world, there was no e-government, so I did not know what e-government was, and how, so it was interesting. I was happy to work in a new field with new technologies, working with people. [...] it was a big beginning.
U.T.	Obviously I was happy and excited, especially since I was passionate about (working with java technology), and I wanted to resume my career in java. Back then; four years ago, the java market was very tight, so when I got the job here, that made me very happy ... Again, it is all goes out of passion for java. I came with big plans in my head, to do this and to do that, I have a huge amount of knowledge about java. So I came here expecting to be able to make a difference, which I did in many aspects.



### ***The Introduction of the Consultants***

The arrival of the consultants marked a significant milestone in the project. The consultants' conceptualization of an e-government section comprised of two (and later three) units and new work arrangements that included specifying new roles and tasks for all parties involved in the implementation process. The plan specified that the IT service provider team becomes the primary developer of the online applications for the website, and the developers in the e-government section were to support the online applications and to identify and resolve bugs. The aim was to give the developers from the Service Development Unit adequate time to learn from the IT service provider team. It was anticipated that with time, a larger portion of the development tasks would be transferred to the internal team of developers. The specification of tasks in the development of the systems was detailed in the job descriptions document that was distributed to members of the E-government Section.

### ***Fulfilling New Roles and Learning***

The ICT professionals fulfilled their roles and largely conformed to the new work arrangement. As specified in the plan, the ICT professionals played the secondary role in the development of the online applications in order to gain experience from working with the IT vendor team. There was another dimension to the developers' roles that granted them some power. According to one of the system analysts, the internal development team were playing the control role, since they evaluated the new online applications for quality and ensured that they met the requirements of the business custodians before signing them off to be published on the web portal.

The former IT manager of the E-government Section presented a different conception of interactions at that time. He explained that he was happy to have the opportunity to learn from consultants with international expertise. He said that he was not engaged in many activities in the early stages, since it was a time to observe the consultants who were

mentors to him. Similarly, the IT manager from the Strategic Planning Unit explained how in the early stages there was an atmosphere of reliance on the consultants who were the experts and they accepted their role and guidance on the project. The narrative reveals a series of actions and interactions that took place in response. One of the senior system analysts in the development unit described the early stages of working with the consultants<sup>20</sup>. One of the earliest activities by the consultants was the arrangement of interviews with the ICT professionals in order to understand the operations of DM. At a later stage, the ICT professionals attended the presentations by the consultants. According to one of the senior system analysts, a significant portion of the presentations reflected the information gathered by the consultants during interviews that was repackaged in a professional way. It was apparent from the system analyst's narrative that they ICT professionals listened intently to the presentations and did not question the nature and content. They accepted the role of the consultants as providing guidance based on their international expertise.

### ***Drawing on the Knowledge of the City and DM***

There were several sources that the ICT professionals selected from to guide their actions of learning and fulfilling new roles. Some sources included social cues at work and official information. Some were formal sources such as the official announcement of the e-government initiative in the media and the consultants' presentations and official documents. They were also guided by individual and personal experiences, educational background and work experiences in the private sector and public sector. They also had first-hand knowledge of DM. Their individual experiences also included knowledge of the city of Dubai and the ongoing efforts of internationalization to enrol into the global society. They were also well aware of all of the issues and challenges this involves. This source of knowledge was an aspect that the consultants did not fully comprehend and was sometimes overlooked.

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<sup>20</sup> Later the consultants and IT vendor team were IBM as discussed in Chapter Five.

### ***Diverse Conceptualizations***

The ICT professionals' actions at the early stages of the project generated five dimensions to e-government that were retained and constituted part of the enacted environment that would inform future patterns of actions. First, e-government represented a government mandate to be implemented by a specific timeframe and within institutional constraints such as public sector policies and procedures. Second, the e-government project represented a knowledge gap that required the help of consultants with international expertise in such projects to assist them in understanding e-government system and the ideal methods for implementation. Third, the e-government system was constructed as a means to achieve personal aspirations of professional development and enriching job experiences, while working in a secure public sector job. This is illustrated in the ICT professionals' sense of eagerness and pride in taking part in the development of the city through working on e-government.

Fourth, the e-government project was appropriated to some degree to the local context of the public sector and Dubai. For example, the e-government committee was engaged in negotiations with members from other public sector organizations. They agreed to work on a complex inter-organizational service at the early stage of the project. The service prioritization model for the online services specified starting with simple projects, yet the managers believed it was important to begin with the more complex no-objection-certificate service that would have a greater impact on the public and business community given the numerous issues raised with the manual paper-based system. Finally, e-government was retained as a significant shift to ways of working. For example, shifts took place in the institutional structures and hierarchy of working on ICT projects. There were new actors from the public and private sector now involved who provide guidance and monitor performance. Finally, we find that a new result-oriented and speedy approach to implementation emerged and this included a changing image and approach to the public sector with a focus on convenience.

## **6.2 Progress in the Implementation of the Project during the Phases 1-4**

This section traces the sensemaking and organizing processes that took place after the initiation of the e-government project and the introduction of the consultants in 2000-2001. The section identifies significant events and responses of the ICT staff during the progress in the implementation of the e-government systems, which is characterized by various streams of continuities and discontinuities. In this research, continuities refer to patterns of actions that are informed by the state mandate and management consultants' concepts and models. Discontinuities refer patterns of actions that are in response to subtle breakdowns to the flow of planned work and the information system, where the project departs (or drifts) from the plan. In both of these streams, the emphasis is on the *situation* and the sense of uncertainty that the ICT professionals encounter.

*Table 6.3 The E-S-R Model for Progress in the Implementation*

ENACTMENT	SELECTION	RETENTION
The ICT professionals dressing and speaking like members from the private sector.	Experiences in the private sector, the official announcement and the focus on creating convenience; the consultants, and DeG	Reinforce the managerial rationale, the role of global consultancy, and the idea of change starting to take form.
Socializing with members from the private sector who work on the project or require assistance with services. They considered them as an extended family.	Social norms in region: familial ties and relationship and informal institutions. The experience of working in the public sector.	E-government project as a means for relationship building, change reinforced.
The IT manager recollecting the past in discussing the use of online banners.	Past experiences and image of practices in the public sector.	Reinforcing the managerial rationale and change.
The IT manager from the planning unit searches for guidelines from online sources, signs up with online competitions by international organizations. Sets up a role in the unit to search for online information.	Global best practices presented by consultants and DeG and the idea of managerial models. The idea of becoming a global city and competing with other cities.	Some of the gap on e-government filled. Role of global institutions, e-government as a means for recognition for the organization's achievements.
The setup of reporting and communication procedures over the years.	Public sector bureaucratic procedures, history of working on the project	Institutionalization of planning for e-government.
Requesting to note the challenge of working with the custodians who request modifying the online service after it was completed.	Recollecting the history of e-government and the obstacles they faced.	E-government as a product of social norms, power structures vs. the rational role of IT.
Reflecting on the role of IS as complementary to existing manual systems, and the institutionalized practices of visiting the public sector.	Stories of people wanting to visit the public sector for transactions, and experience with problems with IT.	The institutionalization of practices such as visiting the public sector for transactions.
Developing a checklist and coding template and then negotiating its use	Experience of working in development in India. Unmet expectations from the IT vendor team.	Shift in power in the development process, local innovation and appropriations.

### ***Streams of Continuities: The State Mandate, Media Coverage and the Plan***

There was an influential role for the state mandate, media coverage and the plan in informing the actions of the ICT professionals who were working on the project throughout the four phases. To a large extent, the plan was being implemented as expected and they completed the development of online applications and met the specified milestones. The patterns of action during these phases reflect the adoption of international best practices models.

### ***Following Managerial Practices***

The influence of managerial practices and concepts in the public sector were evident in the four phases of the project. For example, there were changes in the language and behaviour of the ICT professionals, who would refer to a public sector client as ‘the customer’ in a taken for granted way during interviews. This is further illustrated within the narrative by the IT manager from the Support Services Unit who emphasized that being involved in the e-government project introduced changes in the way they dress, speak and behave, in ways that were similar to the private sector staff and clients. These changes were incorporated into the daily norms and practices of the public sector over time. As noted by the consultant manager at DeG during an interview, there were evident shifts in behaviour of the public sector staff. During the early stages of the initiative in 2000-2001, the public sector staff was perplexed at the idea of the customer and e-government. Even working on a single ICT project seemed to be highly complex to them. Over the years they have taken part in numerous projects and it is an accepted aspect of the job.

### ***Scanning the Environment***

The E-government Section progressed in the implementation of the systems following a speedy approach with the objective of meeting the state's deadline. During this period,

there was an apparent quest by the e-government section to gain recognition for their efforts and achievements on the project. This was embodied in actions of promoting their achievements in local and international media as well as the emphasis on transformation in the stories they shared with the researcher during fieldwork. For instance, the rhetoric of transformation was reflected when they told stories of changes. They described how they behave and dress is different now. They found that their jobs were enriched and became more interesting to the extent that job-related issues are now often discussed with family and friends, as opposed to the past. An example of a story on the theme of transformation was the description of the adoption of online banners for the web portal. An IT manager from the Support Services Unit explained that the idea of allowing online advertising banners on the web portal was an unfamiliar idea to the public sector, since it generates income. He explained that the online banners were now taken for granted, and show the new relationship between the public and private sectors.

During streams of continuity, the ICT professionals' actions reflected specific institutional influences such as the international developmental organizations such as the OECD and the United Nations. The institutions were a source of legitimate information to draw upon at times of uncertainty as well as affirmation of what they are doing. There was a lingering sense of ambiguity about whether or not they were conforming to international standards. This led the IT manager to search for guidelines in online sources for information and case studies on how to develop e-government systems.

The IT manager also registered DM's web portal with several international competitions for e-government, one of the most significant was the United Nation's competition. In his view, the criteria that are used to evaluate web portals in these competitions helped identify steps to take to modify the web portal according to international standards. The outcome of the competition, a high ranking, was also a source of recognition and legitimacy for the organization, and thus contributed to personal pride. The enactment of

signing up to international competition reflected a local improvisation that was in line with informed by the institution of the international development organization.

### ***Streams of Discontinuities: Subtle Breakdowns and Unmet Expectations***

The ICT staff encountered a number of challenges while working on the project. The subtle breakdowns in the systems and work practices, as well as unmet expectations are referred to as streams of discontinuities. As noted earlier on in the chapter, the ICT staff had expectations based on past work experiences. The imagined e-government project was one that enabled them to attain their personal aspirations to work on an exciting job and at the same time retain the privileges of working in the public sector. The discontinuities were subtle and were evident in the eyes of some actors and groups more than others. The discontinuities include challenges of working with other bureaucrats on the project; the relatively low take up of online services by the public in the early stage and finally the bugs found in the e-government systems.

### ***Discussing Challenges of Bureaucracy***

During fieldwork I encountered an event that represented an ongoing discontinuity to work on the systems. I was interviewing one of IT managers in the Support Services Unit, who had just discussed an incident with one of his colleagues related to the development of the system. He was eager to share the incident during the interview and he requested that I discuss it in the PhD thesis, since it is a challenge that needs to be resolved. He explained that one of the challenges that they faced was working with staff from other departments in DM who were involved in the e-government project as the business custodians for specific services. The team from the E-government Section and the IT service provider's team interviewed these custodians to collect requirements for the online applications.



The IT manager explained that the custodians often changed their minds after the online services were completed and they often requested a new and improved version. On some occasions, the custodians would refuse to sign off these projects upon completion, which was a necessary step for the services to be deployed on the web portal. They were unaware of (or gave little priority to) the reality of system development. It was apparent that he was frustrated that these custodians overlooked human and financial resources that were invested to develop the online service. Affectively, being an ICT professional himself, he could relate to the effort that the developer from one of the contracted companies put to work on the project and complete it on time.

On more than one occasion during interviews, the ICT professionals reflected on the role of the existing system in supporting the manual system. During interviews, several of the ICT professionals proposed to view the e-government system as an additional and optional channel to transact with the public sector. They commented that being technologists meant that they were aware of the volatile nature of systems that are subject to breakdowns. They also acknowledged institutionalized practices of people who prefer to visit the public sector and conduct manual transactions.

The theme of the low take-up of online services was discussed during interviews with the ICT professionals, and even by DeG in the media<sup>21</sup>. The ICT professionals expected the situation of the low take-up given the cultural significance of visiting public sector organizations. The IT manager from the Support Services Unit explained the public value of coming to the office to meet front-office staff and for people to meet and have conversations on developments in the city.

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<sup>21</sup> The low take up of services draws on data from interviews during 2006/2007.

### ***Developing a Coding Template and Checklist***

The historical narrative on the implementation of the e-government systems pointed to other small breakdowns during the development process. The ICT team was confronted with many bugs in the e-government systems and often there was inadequate documentation<sup>22</sup>, which reflected that the coding process was conducted in an ad-hoc way. This did not meet their expectations of what an IT vendor team with international expertise would do and how they would play the role of a mentor. As the IT manager from the development services explained, it was as if they too were learning along the way. At one point, the initial IT vendor team left and a new one arrived. This contributed to further disruptions in the development process, since there was inadequate documentation for the new IT vendor team to work with.

In response to the problems in the systems, the ICT staff developed a coding checklist and template to control the output of the development process. They created a prototype that illustrated that the coding checklist and template to show the management, who accepted it as part of the development process. This improvisation to work practices departed from the plan and the guidance of the management consultancy. Thus, the ICT professionals working on development of the applications from that point onwards were playing a new control role in the development process.

### ***Drawing on Experiences and Expectations***

There was an evident found role for international experts and best practices that are drawn from both management consultancies and the international organization community. This took several forms: in new work arrangements that included outsourcing to the private sector, introducing benchmarking activities and international

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<sup>22</sup> There were divergent views on documentation quality. The IT vendor team commented that they were following the coding template. In this example, we are reflecting the views of the development services team, where more than one source noted the problems in the documentation during the early phases of the project.

models of best practices to the planning and development phases by DeG. The actions enrolled the actors into a global hierarchy with normative influences as the project was submitted into global competitions, creating a new meaning to legitimacy of ICT work in the public sector that now incorporates global standards. There was also an affective dimension to e-government, as it was seen as a means to attain personal aspirations of taking part in an exciting job and at the same time benefiting from the privileges of a public sector job.

For example, one of the IT managers from the Support Services Unit explained that he values spending time after work with his family and taking time to relax. For example, the ICT professionals often discussed during interviews how they drew on their knowledge and past experiences of working in the private sector. They worked more with staff from the private sector and started to build relationships that seemed like they were part of an extended family, and no longer locked in the back office.

Some of the ICT professionals who were interviewed were not from Dubai, yet they still were aware of the significance of social norms and traditions of bureaucracy in the region. During discussions of the low take-up of services, the ICT professionals reflected on the positive aspects of these socio-cultural practices and norms. They acknowledged that the prevalence of these social norms influenced the implementation of the e-government systems. As several IT managers explained, working on the project involved interacting with clients from the private sector who needed assistance with the new e-government systems and they had become like an extended family over the years.

### ***New Meanings for E-government and Roles***

The actions taken in response to these streams of continuities and discontinuities contributed to the accumulation of experiences and the retention of a new set of meanings for e-government within the group. E-government modified the way these

actors defined their roles as modern ICT professionals and public sector staff who conformed to the private sector and international best practices.

The ICT professionals retained other meanings for e-government, as actions in response to discontinuities occurred. Subtle breakdowns included problems in the e-government systems' performance, the quality of work provided by the IT service provider's team, the obstacles in the signing off procedure and the low take up of services. An additional example of a breakdown was the problems with the software application Support Magic that was used to measure performance of support services. As one of the support officers explained, there were times when the system went down and the tool was an inaccurate source to evaluate work.

The e-government initiative was associated with rational ICTs and a managerial rationality. For instance, the software tool Support Magic introduced the idea of monitoring performance, which provided data for quarterly reports that were sent to the central government agency DeG. This also reinforced the new hierarchy for ICT work in the public sector that involves additional actors from central government units. However, the volatility of the software as the systems went down weakened the accuracy of the rational role of ICTs in managing the public sector (in the eyes of the ICT professionals).

One of the objectives from the e-government project was to modernize the public sector. There were many cultural practices and social norms that are often attributed to inefficiency in the public sector such as delays in the processing of transactions by bureaucrats. E-government was seen as a means to overcome the social norms that contributed to these inefficiencies. However, the small breakdowns during work led to opening up the issue of cultural and social norms. During these times, these social norms were redefined as not entirely negative, but as an inherent aspect of work that should be acknowledged and appropriated into the e-government systems. For example, there were suggestions to run both the paper-based system and the e-government systems together

to accommodate for these social norms. Finally, e-government breakdowns in the small world of the developers represented a means to regain ownership of the development process.

### 6.3 Closure of the Project and Starting the New

Table 6.4 E-S-R Model for completion of the project and starting the new

ENACTMENT	SELECTION	RETENTION
Speedy implementation of the e-government project before the deadline makes them the first to complete the project; they then surpass the objective of 90% and provide 100% of services over the Internet.	History of being recognized as the superstars of e-government.	E-government as a means to achieve recognition.
Working on the development of the services using a coding template even though the next generation project started.	Power balance in the development process, experiences of bugs in the system, template and innovation.	E-government needs ICT professionals' efforts to function smoothly.
Sadness expressed to researcher by one of the IT managers now that the project is coming to an end and there is less excitement and innovation.	Past innovations and pride in achievements	Changing role in e-government with less innovation.

There was a period of stability when the e-government systems were completed and delivered for use. It was evident that there was an ongoing institutionalization of procedures in the E-government Section as the project was being implemented and that reinforced and reinstated the role of bureaucracy. For example, one of the IT managers created communication and reporting systems to formalize work procedures and improve the management of the E-government Systems in use. As noted by an IT manager from the Strategic Planning Unit, the early years of the project was a time when there were

few reporting and evaluation procedures in place. At the time such procedures were deemed as unnecessary when the project was small and the management consultants were present. Over time, many of the communication and reporting procedures were established, thus making the e-government project follow the bureaucratic ways of working.

### ***The Completion of the Project***

The ICT professionals gained recognition in the local media for their achievements in the project. Their achievements on the e-government project were also recognized among other public sector organizations, central government organizations for e-government and the private sector companies. They were labelled as the e-government ‘superstars’ as one of the managers from Microsoft commented in an interview. One of the important events during the project was when DM met the state objectives of offering 90% of services online before the deadline, before all of the other public organizations. Within a short period of time, DM’s e-government system offered 100% of services over the Internet. It was apparent that during this period, competing with others and gaining recognition was an emergent way of working. It was even visible in the interviews, with several IT managers who explained that they are constantly competing with others in terms of achievements and even with themselves, where they try to surpass past achievements.

During the final phase of the project (2006-2008), there were other developments taking place. In particular, the E-government Section was initiating a new project, the Next Generation Project. The objective of the new project was to set up a flexible service-oriented infrastructure that was based on concepts of modularity. Web Sphere, a new package of software products was adopted. The objective was to set up a new technical infrastructure that allows for modifications and changes in online services to take place whenever needed, with little disruption to the operation of the e-government system.

### *Accommodating the New Project*

The Next Generation Project involved another round of coding for online applications. Working with Web Sphere software required training of the system developers. The changes were a source of uncertainty given the relative stability experienced for some time. As an IT manager from the Development Services Section commented, the internal development team was unfamiliar with the new operating software and coding language since at the time there were few people with expertise in this. Therefore, they had to take a few courses. The new project carried implications for the negotiated work arrangements. They were faced with a situation that was similar to before the e-government project was initiated. The ICT professionals had to eventually forfeit their control role in the development process on the new project. They were expected to play a secondary role in development in order for them to learn from the consultants and IT service provider team. In the past the ICT staff achieved significant control over the development process as they gained experience, improvised, bureaucratized and introduced tools such as a coding checklist and template.

The event of reaching state objectives generated a sense of uncertainty as the ICT professionals wondered: what next? The sense of ambiguity was guided by earlier experiences on the project. In earlier stages, the e-government project was seen as an ongoing innovation. In the same spirit of innovation, the ICT professionals' social identities were crafted around the idea of being involved in an innovation. As noted by one of the IT managers from the Strategic Planning Unit, there was a sense of sadness ever since they reached this period of stability and there were less activities of generating innovative ideas for the project. At the same time, the set up of the new technical infrastructure generated a sense of disappointment among the development team as the online services were to be coded again. This meant losing or re-doing a significant amount of work on the existing system and accumulated experience, improvisations and workarounds. However, as several of them commented in interviews, this was also an



accepted part of their jobs as developers given that technology is constantly changing and requires constant learning and work.

### ***Drawing on a History of the E-government Project***

There was an overall acceptance of change by the ICT professionals. Developing communication and reporting procedures involved drawing upon their roles as bureaucrats who are expected to work in a standardized and routine way even in ICT work. However, even though the situation is similar to the early stages of the project, the retained understanding and meanings for e-government are now more complex. We find that in addition to conforming to roles, they were drawing on their experiences from the e-government project since 2000. This was illustrated when the developers and systems analysts continued to work on coding the online applications for the existing systems. The online applications that were developed in phases one and two were problematic and contained bugs since they were developed without the coding template and checklist. They recoded these application based on the template to avoid problems in the e-government system.

The continuation in the process of coding, even with knowledge that a new system will eventually replace the current one, shows a commitment to their roles as bureaucrats. An alternative interpretation is that these enactments generated a retained understanding of e-government as a locally improvised innovation and their roles as owners of the e-government system. The link between their identities as owners of these innovations in e-government made it challenging to let go of the e-government systems to make way for the new infrastructure. Parallels can be drawn between this situation where there is an attachment to the existing systems and applications with case studies of people who find it difficult to drop their tools (Weick 1995). In this case, the difficulty was in stopping to develop and modify the existing systems.

## 6.4 Key Findings for Part I

This section traced a series of enactments by the ICT professionals that constituted the sense making and organizing processes during the four phases of the project. During the early stages of the project, the ICT staff conformed to the new managerial concepts and approaches that were introduced with the e-government projects. At later stages, they took actions to retain their autonomy at work and to reinforce the existing norms and practices of the public sector in Dubai. These patterns of actions are informed by different scripts (a template for programmed action) that are selected during the sense making process, as indicated in the enactment-selection-retention (ESR) model (Weick 1979; Weick 1995).

The ICT professionals are seen as activating three broad types of situational scripts (Weber & Glynn 2006). The first is the script of following international best practices, which is associated with e-government. The other scripts are historically constituted and institutionalized and they are the script for being a professional bureaucrat and the script for being part of the socio-cultural informal system. The findings reveal that the new script was instantiated and reproduced during the early stages of the project. These actors drew upon the new scripts as well as the existing scripts in response to situations of uncertainty. The argument is that this represents a subtle process of forming and institutionalizing a localized script to work on e-government.

As indicated in section 6.1, there were actions that were informed by this new script, such as using managerial concepts of ‘the customer’ in everyday language and dressing in professional attire that was similar to the private sector. Another example is the IT manager’s action of enrolling the e-government web portal into online competitions for international organizations, since there was little experience in the field and few examples of successful e-government in the Middle East region. These actions were informed by the new script of *following international best practices*, which was

reinforced with the new e-government format. Adopting managerial concepts and approaches was considered as appropriate and legitimate during situations when e-government and the work arrangements were new and unfamiliar.

As outlined in Section 6.2, there were different patterns of actions exhibited at later stages of the project. Their actions involved alternating between historically constituted scripts and the new one. Three examples from the findings show that actors iterated between scripts. First, this is exhibited in the situation when the actors faced the situation of the low take-up of online services, during the early stages of the project. In response, the actors questioned the role of the e-government system as a complimentary system to the manual system. This involved activating the script *of being part of the informal socio-cultural system*. During interviews, several of the actors considered people visiting the public sector offices as an institutionalized practice and that these visits are of symbolic value to visitors and staff.

Another example was the challenge of working members from other departments who request that the modification of completed online services some more and delaying the signoff of these applications. The ICT professionals shared narratives with the researcher in regards to such situations. Such actions were based on the script of *being a professional bureaucrat* and their understandings of the attributes of local traditions of bureaucracy and socio-cultural dimensions such as lax behaviour of staff.

The final example is the situation when the ICT professionals encountered problems in the progress and performance of the service providers. They formed expectations that the management consultancy and IT service provider team would lead the way. They edited their sensemaking process by coming up with a coding checklist and a template. This was based on the script of *being a professional bureaucrat* that showed commitment to the ownership of the project. In this situation, the ICT professionals were not only

responding to an equivocal situation to resolve a technical problem, they were also seizing an opportunity to regain their ownership of the system.

At an individual and inter-subjective level, the script of following international best practices can be seen as experimentation with new managerial ideas and practices. Conforming to the new managerial ideas and models was also out of the aspiration to be part of a successful e-government project that improves their position in society as contributors to city development. Through these actions the ICT staff were also realizing their ambitions of working on an exciting project and at the same time benefiting from the job security of a public sector position.

The actions of selecting this script was legitimized by the institutional carriers of this script, which are the e-government project itself, the management consultancy, the IT service provider, and the central government agency of DeG. For example, these managerial ideas and approaches were legitimized through the presence and interactions with the management consultants and IT service providers. As a result, the actors were increasingly coming across concepts of 'the customer', efficiency and benchmarking. In addition, the concepts often appeared in job descriptions, presentation slides and the media. These terms acted as signifiers that associated the role of ICT professionals with particular behaviour and practices. There were also interactions with members from the business community who needed the ICT professionals to assist them with the e-government system to conduct their transactions. Another significant factor was the role of the central government agency (DeG) that governed the project through monitoring and evaluating performance and setting guidelines and key performance indicators.

In sum, there were individual experiences and aspirations that contributed to the employment of this new script of following international best practices. Following the management consultants' plan and adopting these managerial concepts and approaches was legitimized through interactions with the private sector and regulative forces at play.

These factors contributed to the habitual actions of labelling clients as customers, and thus, elements of the new script and experiences of enactments were retained.

There are also factors that led to alternating between the new and old scripts. At an individual level, these acts represent experimentation to “workout” a way of functioning that conforms to both the new and the pre-existing institutions. A similar idea is presented by Johnson *et. al* (2000) in their study of privatization projects in the UK, which involved experimenting with the new script of being customer-oriented. As presented in this section, the ICT staff’s actions also retain and reproduce historically constituted scripts. This is triggered by puzzles and contradictions that arise from the presence of new sets of ideas and practices that compete with existing ways of working. The alternation of scripts may also be interpreted as a coping strategy where the new is accommodated for legitimacy and response to regulative forces. At the same time, the pre-established scripts represent the trusted route to take during breakdowns.

So far, we have outlined the relationship between actions during the course of the project and the activation of various scripts to inform action. At this point, it is time to address the issue of what are the implications of these enactments and selection of scripts for the project and their roles as ICT professionals. As indicated in the earlier sections, the ICT professionals followed managerial ideas and practices in ways that reproduced bureaucratic and socio-cultural norms and practices. The move between old and new scripts was contributing to the formation of a locally meaningful script to work on e-government. The case study reveals that the ICT professionals retained new experiences and meanings through these actions. This was illustrated in the internalization of elements such as concepts of ‘the customer’ which is used in a taken for granted way.

This is a long-term process that is shaped by perceptions and actions of local actors in response to situations at work and their agency is activating multiple scripts. As for their roles, the ICT professionals are people who have the desire to achieve aspirations of

working in an exciting job and retaining the privileges of the public sector. They are also people who are willing to engage with the new but retain their sense of autonomy as ICT professionals and public sector employees. The section showed that they were actively selecting scripts according to the situation of uncertainty and to gain their own objectives of securing their aspirations and retaining their autonomy.

The discussion of scripts, which are institutionalized typifications that have to do with new and existing institutions, leads us to consider the role of institutions in shaping sensemaking. The act of selecting a script is informed by the institutional influences of NPM and e-government, as well as the influence of existing norms and practices related to bureaucracy and the public sector in Dubai. The nature of these institutions and how they shape the sensemaking of these actors is discussed in detail in the part two of this chapter.

## **Part II: Institutional Influences to Sensemaking and Enactments**

This second part of Chapter Six analyzes the institutional influences that informed the ways in which the ICT professionals made sense of new concepts related to e-government and worked on the implementation of the e-government systems. This part of the analysis is comprised of four sections. The first section presents an overview of existing institutions in the UAE's public sector and the newly arrived e-government format. The section presents the newly arrived e-government format. The format for e-government introduces the objective of transformation of the public sector in terms of a modern state of the art infrastructure, setting up efficient online service delivery and a customer-oriented and friendly public sector environment. The second section explains how the ICT professionals made sense of the management consultants' ideas as they worked on the project and conformed to them. The section presents the development model in Dubai followed by three examples of patterns of actions that are informed by it.

The third section presents the role of institutional dynamics between the new and existing institutions in localizing the e-government project. The section presents three examples of conflicts during the project and emergent improvisations. This is followed by an explanation of the institutions that influenced these actions. First, there are the actions of negotiating with best practice models that are informed by the historical role of the public bureaucracy. Second, there are the actions of iterating between a virtual and local presence that are informed by local traditions of bureaucracy and socio-cultural norms and. Third, the ICT staff reasserted ownership of the systems which is linked to the role of the public sector employee in the development of the city.

The fourth section presents key findings that highlight the outcomes of enacting these competing macrostructures in Dubai's public sector in terms of changes to practices, workarounds in the system and resolutions to situations. Finally, a summary of the chapter with key conclusions is presented.

## **6.5 Local Institutions and the E-government Format**

### ***A History of New Public Management***

As discussed in Chapter Five, the UAE has been engaged in the development of the public sector since the formation of the federation in 1971. As Abdulla (2010) notes, the UAE encountered challenges after the withdrawal of the British from the region in the early 1970's. There was a vacuum that needed to be filled and there were several challenges encountered that include: employing the newly discovered oil resources for development, nation building, the creation of a generous welfare state and the development of the country's infrastructures. All of these issues had to be learnt from scratch (Abdulla 2010). Thus, the development of the federal public administrative systems was necessary to face these challenges and to facilitate socio-economic development.

During the early years of independence, the public sector in the UAE was built on the existing, historical and simple public systems that a number of the emirates created decades before the formation of the UAE. Dubai set up one of the most advanced public systems at the time, which was a municipal office that was responsible for a number of activities such as supervising and managing prices in the marketplace and ensuring the cleanliness of roads (Zahlan 1978; Taryam 1987; Al-Sayegh 1998; Davidson 2005)

Concepts and practices of quality assurance, evaluation and privatization, which are related to new public management ideas and activities in developed countries, were introduced into the UAE's public sector since the 1980's. The NPM concepts arrived as part of initiatives to modernize and reform public administrative systems. In the 1980s, around a decade after the formation of the federal public sector, the UAE began taking part in an international program by the UNDP to monitor and manage the public



administrative systems. The federal government invited experts from the UNDP to evaluate performance of the public sector (Jakka 1993; Jakka 2004). Commissioning the UNDP for such a task reflected the objective to improve the newly formed public administrative systems, which spans both the federal and local levels. The federation's effort to modernize the public administrative systems reflects their significance, since they were seen as having a central role in the socioeconomic development of the UAE. The UNDP's report provided suggestions in the area of human resource recruitment and training to ensure that the staff in the public sector have adequate qualifications and skills to fulfill their roles and that this becomes the basis for their promotion (Jakka 1993; Jakka 2004).

Programs to reform and manage public administrative systems evolved over the years, and by the early 1990's these programs started to incorporate ideas and approaches related to quality management. The emphasis on quality and efficiency coincided with programs to introduce computers into the public sector. As such, the UAE created the Information Authority as part of the federal government to promote computer usage and to provide IT training. The importance of computerizing the public sector was also evident in Dubai where an information authority with similar objectives was created (Mansour 2008). Ideas from NPM were also employed in Dubai in the 1990's that included total quality management initiatives in various domains of the public sector. This was partly attributed to Dubai's aspirations in becoming a commercial center in the Gulf region and creating a favorable environment for the business community. The concepts of quality management in the public sector are still present and are relatively new (Jakka 2004; Ayish 2005; Mansour 2008).

As part of this move towards improving quality dimensions of the public sector, the UAE initiated a number of privatization projects (Federation of UAE, Chambers of Commerce and Industry 2011). These privatization projects did not encompass all government services, and the government retained significant public sector organizations such as

health and education. As Mansour (2008) points out, it was important for the UAE not to alter formal and informal institutional arrangements that were central to the relationship between the state and the citizens in the Gulf region. The efforts to improve public administrative systems in the UAE culminated to joining the Program on Governance in the Arab Region initiative (abbreviated as POGAR). The program was set up by the UNDP in year 2000 and aimed at promoting good governance in the Arab region. The POGAR program introduced a number of projects for reforming administrative systems, and three of them were centered on the use of ICTs to improve efficiency and transparency in public sector activities. One of the most prominent of these ICT projects was the creation of the federal e-government system.

However, the e-government initiative in Dubai was one of the earliest in the Middle East region, and was set up in year 2000 before the UAE's federal e-government initiative. In Dubai, the e-government initiative's focus was on using ICTs to create convenience for all people and businesses that interact with the public sector. The official announcement of e-government by the state media presented the e-government initiative as a contributor to the economic development of Dubai and a means to become the economic hub in the region. The e-government initiative introduced the managerial ideas that were similar to those adopted in earlier years and embodied in various projects, with the addition of newer dimensions of 'the customer'. This was partly through the objectives articulated in the announcement in year 2000. These ideas were also spreading as the public sector continued its engagement with management consultants. At the state level in Dubai, a team of management consultants was hired and they conceptualized the development of the state's institutional structures for e-government. At the level of individual public sector organizations, there were several private sector companies that were hired to assist plan for these projects, since each organization was relatively autonomous in the planning and implementation of these systems.

## ***Policies and Institutional Structures for E-government***

The e-government initiative in Dubai was developed at a time when there were significant efforts by various countries to exploit ICTs capabilities to reform the public sector and improve modes of governance. From the outset, Dubai's e-government initiative defined its objectives in terms of improving levels of efficiency in the public sector and creating convenience for the public who interact with the public sector (Mourtada 2010). A clientistic culture began to emerge partly in response to the development of the three institutional structures that were specific for e-government.

One of the central agencies, Dubai e-government (DeG), was contributing to the creation of a clientistic culture in the public sector and the introduction of best practice paradigms. DeG was responsible for the planning and monitoring of the web portals and online public services to ensure that they are standardized and meet key performance indicators. DeG described itself as contributing to both the technical aspects and "business side" to support the e-government web portal development and management. This is clearly reflected in DeG's mission statement that emphasizes the notion of 'the customer' as included in a presentation during a UNDP meeting in May 2005, which states:

*To achieve a virtual government through provisioning of high-quality customer focused eServices for individuals, businesses and government departments and to promote eServices adoption through customer management.*

Many of DeG's activities contributed to the production of a managerial discourse in Dubai's public sector. The managerial ideas were part of a consultant-like approach that the members of DeG adopted themselves in presentations. One of the most central activities of DeG was to conduct benchmarking with other e-government initiatives from other countries. A central component in many of the presentations was the stages of growth model that was used to depict the desired stages for e-government. The final stage depicted e-government systems that are integrated with other systems across the public sector in order to have a whole-person approach in service delivery.

Managerial ideas and concepts were spreading and being taken for granted in the public sector as the e-government initiative progressed over the years. This was discussed by one of the managers from DeG during an interview. He recollected how managers and staff from the public sector in year 2000 were very different from what they were at the time of fieldwork in 2006-2007. He explained that during presentations, the managers and staff questioned how members of the public could be considered as customers; it was a new idea to them at the time. They also found working on an ICT project a significantly large and difficult task. In later years, they were working with numerous projects that were larger in scale and became a taken for granted part of their work.

### ***The Management Consultants***

In addition to the influence of the state mandate and the institutional structures, the arrival of the management consultants to DM was a significant catalyst to adopt new managerial concepts and practices by the ICT professionals working on the project. The consultants' influence was through their interactions with local actors to plan for the project. They also subsequently introduced new work arrangements in the IT department as the e-government section was born.

There were also new job descriptions that the management consultants created for the newly formed e-government section staff that introduced managerially inspired practices and notions of 'the customer'. For instance, the job descriptions specified that part of the role of the system developer is to enroll in training courses that improve behavioral skills when dealing with customers. This excerpt from the document illustrates this:

*Intermediate customer focus course: The activities on this course will help participants learn how to build rapport, manage conversations, handle complaints and conflicts, and manage clients' expectations.*

The consultants' influence was also present through their evaluation of the project and the sharing of expertise. The consultants' initial study at DM also emphasized the significance of adopting international best practices to guide the development and

management of the systems. After the study they gave a presentation to a number of staff and managers that focused on two best practices models. One of the models used was the e-government maturity model (otherwise referred to as the stages of growth model), which presented the different stages of e-government that start with the online presence stage and moves towards the organizational transformation stage. DM was identified as being at the first stage of the online presence. There was also the operational readiness model. DM's readiness was measured based on responses from a questionnaire sent to different departments. The results showed a low score in the four areas of the matrix: strategy, organization, process and delivery capabilities requirements (PWC presentation June 2000). The presentation also included screenshots of South Australia's e-government portal as an exemplar of success and it was used to frame outcomes of success.

The adoption of these managerial ideas and practices were discussed during an interview with the head of the Support Services Unit. He explained that the department adopted managerial ideas, which he labeled as "a new business mentality". This involved the introduction of the logic of competition in service delivery performance. The public sector has to compete with the private sector since there are some functions that can potentially become privatized. He also explained that there are many changes underway. For example, the citizens are treated like valuable customers and that there are questionnaires to fill in to measure their satisfaction with service standards.

## **6.6 Making Sense of the Management Consultants' Concepts**

The aim of this section is to show the role of institutional influences in shaping the way in which the ICT professionals make sense of the management consultants' concepts. Many of the ICT professionals, particularly those that were present from the early stages of the project (some refer to them as veterans), had to make sense of these managerial concepts. These actors were making sense of the managerial idea of 'the customer' and international best practices by reproducing them through their actions and rhetoric. These concepts were introduced through their engagement with the management consultants at work. These concepts were also present in the guidelines that were outlined in the job descriptions for staff in the e-government section. This section shows that these actions were not only individual responses to events but also were conditioned by institutional influences related to the development model of Dubai.

The section begins with an overview of the development model in Dubai that includes a focus on rapid economic modernization and enrolling into the global systems. The model also is shaped by the historical role of public bureaucracies in the development of countries in the Gulf region. The section then presents three distinct patterns of actions during the project that reflect making sense of managerial concepts, and explains how they are informed by these institutional influences. These actions include: acting like students, performing like the private sector and becoming part of the global.

### ***Following Dubai's Development Model***

The development model adopted in Dubai has been the focus of many studies of the Gulf region (Shihab 2001; Sampler & Eigner 2003; Abdulla 2009; Davidson 2009; Hvidt 2009; Abdulla 2010). The model focuses on economic modernization and enrolling into the global system, which contributed in Dubai's position as the economic hub of the region. Dubai also prides itself on being one of the earliest post-oil economies in the Gulf as a result of a focus on economic diversification. Such economic outcomes have contributed to making this model the preferred route for neighbouring countries in the Gulf. As noted by Abdulla (2010), the development model in the region has evolved over the past two decades and is very different from the stereotypical model that was pervasive in the 1970's and 1980's that relate to notions of the rentier state<sup>23</sup>. In his view, the old models are no longer a proper depiction of the reality of these countries and the routes taken to achieve development. As is the case in many countries in the Middle East region, the public sector is central in implementing developmental projects. The development model of Dubai is based on four elements. The elements include: an interventionist approach that includes fast-track decision making, the logic of speed, being part of global systems and adopting international best practices, and finally a focus on the service sector and the creation of a knowledge-based economy.

In the case of Dubai, the development model aims to create a modern city that is an economic centre in the Gulf region (Abdulla 2009). The development model is characterized by an interventionist approach by the state that focuses on speed in the implementation of projects within a short time frame to reach tangible results. Such an approach has been conducive for speedy implementation of projects and creating an environment that facilitates business investments in the state. The rapid urban growth of the city of Dubai is indicative of this particular model. The interventionist approach by

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<sup>23</sup> As noted by Beblawi (1990), the rentier state refers to a government that generates external rent, which is then allocated to the population. Countries that depend on oil resources more than a domestic productive sector are often described by this term.

the state has been conducive in accomplishing development plans over short periods of time. Such a trend is evident in the Gulf region that has witnessed significant institutional changes that were unprecedented given the fast pace of change over the past few decades, which was mainly driven by the employment of natural resources (Chaudhry 1997). Yet, Dubai has experienced far more changes than its neighbours. Many compare Dubai's development model to those in Asia that have fast-tracked decision making by top officials of the state (Hvidt 2009). Parallels are found with the Singapore model in particular where objectives include effectively implementing projects to attract investments and securing a leading position as an economic hub.

The public sector in Dubai has played a pivotal role in development and this sets it apart from the archetypes of sluggish public bureaucracies in the region (Hvidt 2009). As noted in several studies, Dubai's public sector portrays itself as a leader in adopting new ideas and projects and reinforces this logic of speed, to the extent that is labelled as the fastest city in the world (Krane 2009). However, there are variations in the implementation of these developmental projects across the Gulf region. These differences are evident in a study by Thatcher (2009) on the establishment of regulatory authorities (IRAs) for the stock exchange and the telecommunication market in the Gulf. Thatcher (2009) notes that there were variations in the outcomes of these projects depending on the country's institutional arrangements. He explains the paradox that countries such as Kuwait with a strong legislature encountered contestation and a slower pace in the implementation of these projects. Thatcher (2009) contrasts these with case studies of countries that have a strong leadership from rulers are much faster and successful in the implementation of these projects. Dubai and the UAE as a whole are examples of countries with institutional arrangements that promote speedy implementation of such projects.

As noted earlier, the GCC countries have encountered many challenges since independence related to nation building and catching up to enrol into global systems



(Abdulla 2010). These countries were keen on socioeconomic development and enrolling into the global systems. This is evident with Dubai, which seeks to position itself as a global city, and its rapid economic development led to high rank positions within benchmarking activities of international organizations. One of the main objectives of the development model is to adopt international standards. This is evident in the case study of setting up IRAs in the UAE for example. The introduction of international experts has been taking place for years in order to follow best practices and ensure global standards are met. The emphasis on speed and institutional change in the Gulf region makes ICTs an important component in the development model in Dubai. Many initiatives that centre on ICTs have been adopted given their espoused potential in promoting social and economic development, these initiatives include Dubai's Internet City and the knowledge based economy initiative (Sampler & Eigner 2003; Ayish 2005; Davidson 2005; Abdulla & Nicholson 2009; Davidson 2009; Hvidt 2009). As noted earlier on, the modernization of the public sector is important for social development of the state as well as to create a favourable environment for the business community that is central for economic growth.

As noted in an interview with a consultant manager from DeG, ICTs have also been depicted as tools that can assist in city development and to cope with pressures to manage the city such as the high influx of people that led to a strain on the public sector that serves them. The implementation of e-government systems was a new idea in the Gulf region in 2000 and was mainly in response to a state mandate that aimed at transforming the public sector in a period of 18 months. Also, as is the case with other significant endeavours by the state, there were institutional structures for e-government set up within a short period of time to plan and manage this large scale ICT project. The e-government project introduced a number of new concepts into the public sector that necessitated that the ICT staff makes sense of them. The following sections show that e-government and new public management, that are part of the Dubai development model, inform the patterns of actions of the ICT staff. The patterns of actions include: acting like students, performing like the private sector and becoming part of the global.

### *Acting like Students*

One of the main priorities in DM was to set up the e-government systems by the deadline that was specified in the state mandate. This was not a simple task given that at the time the internal ICT staff did not have adequate experience with web-based technologies. Thus, they assumed the role of students when the management consultants arrived to assist the organization in developing a strategy for the implementation of the project.

During the early stages of the project, the ICT staff exhibited a sense of acceptance of the management consultants' role as mentors. They also conformed to the new plans to establish an e-government section. The IT managers and developers often noted during interviews that they were in need of their international expertise on e-government and that they were willing to learn from them. The student-mentor relationship was discussed during an interview with a former IT manager in the E-government Section who noted:

At the time, I was assigned to be a project manager and a team from IBM was assigned to work with us on the project. [...] At that stage I learned a lot from the project management point of view. How projects are managed, what project managers do to keep track of projects to be delivered on time, according to budget and with the right quality. How the risks are managed, how the team is motivated (Former IT Manager in the E-government Section).

Working with the management consultants was the appropriate action to take, given that at the time they lacked experience in the area of web-based technologies. The former IT manager reflected on his own personal experience from working with them, where he explains:

I forwarded myself as a candidate [...] I had a few other commitments and I was willing to do both so that I can be free up for e-government and once I was assigned for the project, I knew I would be happy, it was a new project and a high profile project [...]. I would say in the first few months I wasn't adding a lot of value in terms of doing project management role; it was more of a learning experience (Former IT Manager in the E-government Section).

Learning from the project involved gaining an understanding of what e-government is about and its objectives. The former IT manager explained the role of the management consultants in framing e-government:

From the interactions with the experienced project managers from the vendors' side and having them mentor me to improve my skills...I also learned a lot about e-government itself, what it is about and the drivers behind e-government initiatives and how these projects are implemented across the world, what kind of methodologies are used and action plans (Former IT Manager in the E-government Section).

Thus, the ICT professionals in the e-government section followed the management consultants' guidance and cooperated with them. For example, the IT managers, system analysts and developers, who were present from the initiation of the project, took part in the initial study conducted by the management consultants. They attended their presentations and listened intently to their description of e-government and their conceptualization on how to implement these systems. As one of the system analysts explained, there was a lot of information gathered from staff during the initial study. In his view the information was repackaged and presented in a professional way in the presentations they attended.

For example, the presentations by the management consultants included the stages of growth model that depicted the progress in the implementation of the e-government systems. The model was the basis in which the project was planned in four phases that began with the simple services and moved to more complex ones. The planning for the project also included new work arrangements that reinforced their roles as students. As noted in the planning of the project, the developers from the e-government section were expected to support the IT service providers' team who were responsible for development of these services.

The management consultants' objective was to have the internal development team to slowly take up the development activities, as the project progressed and experiences were gained from interacting with IT service provider's team. The acceptance of this

student role was reflected in an interview with the head of the development team who explained that the IT service provider team was internationally renowned and they expected them to lead the way. These high expectations of the IT vendor was indicated in an interview with an IT manager from the Development Unit, who explains:

For example, when we started in 2002... at the time we had no idea how to start and the IT vendor should have led the way... This was a long time ago, for example, at least for myself, I expect the IT vendor to have standards and they should follow them (IT Manager at the Development Unit).

Playing the role of students was conditioned by institutional influences of the Dubai development model. To begin, the main influence to their actions is the state mandate and the emphasis on speed, which is a priority in the public sector as a whole. The development model in Dubai influenced the internal e-government team to conform to the consultants' guidance and to accept them as mentors. They were keen on meeting the objectives of the state mandate that had a strict deadline for the development of the e-government systems within 18 months. The role of the state mandate was emphasized during an interview with the head of the e-government section:

I just want to clarify that the e-government project for DM started in 2001 and the initiation of the project was by Sheikh Mohammed [...]. There was a target and a time frame to achieve the goal to have 90% of government service provided over electronically by the end of 2007. Of course everyone, including our organization implemented the mandate and we started placing a holistic plan and the e-government section was created to implement this project (Head of the E-government Section).

There was also a sense of urgency to establish operable e-government systems within the timeframe of 18 months. This was informed by the need to respond to the state mandate. The emphasis is on meeting this deadline reflected the logic of speed that defined how the public sector operated in Dubai. They were intent on achieving results before other public sector organizations and to be the leaders in the e-government field (IT manager from the Support Services Unit). The institutional structures for e-government assisted them in implementing the systems by providing them with Key Performance Indicators to guide the project. DeG also offered feedback on their progress.

Finally, there was an acknowledgement by the staff in the e-government section and even from DeG that e-government was a tool to manage the influx of people into the city and to alleviate the pressures on the public administrative systems. This meant that it was important to set up these systems on time to resolve pressing issues they were facing in the public sector such as the delays in serving a high number of people. The previous paper-based system often included delays in obtaining services given that they involved a number of transactions from different departments. The issue of traffic congestion was also a concern in the city and e-government was seen as a way to ease the problem (IT Manager from the Support Unit).

During the course of the project, there were actions taken that reflect the student-mentor relationships. These actions include the ICT staff cooperating during the initial study, fulfilling their roles in the new e-government section, and seeing the consultants as mentors. As discussed so far, the development model in Dubai conditioned these actions. It is worth noting that there were various dimensions to these influences. There were regulative institutional influences, such as the state mandate that they had to respond to. There was also an institutionalized role for the public sector to be a leader in the developments of projects to support the development of the city. In addition to these, there were also normative institutional influences. This was evident when the internal ICT staff interacted with the management consultants. They created normative expectations on how to define e-government, what represents successful implementation of e-government systems and how this was to be achieved based on international best practices.

### *Performing like the Private Sector*

As the implementation of the e-government project progressed with time, the ICT managers and developers increasingly used managerial practices and concepts that were linked with the e-government initiative and promoted by the management consultants. Their behaviour reflected the influence of the private sector that was involved in the project.

These changes were alluded to during an interview with an IT manager from the Support Services Unit, who worked in the organization for more than two decades. He was eager to describe the changes in himself and his colleagues who worked with him. He mentioned that they were dressing in more formal attire, in ways that resembled the staff from the private sector. They were also changing the manner of speaking, to sound more professional. The researcher also observed this rhetoric during fieldwork. For example, during interviews, the ICT staff often used the term ‘the customer’ to refer to the clients in a taken for granted way as they discussed the project.

From the point of view of the IT manager from the Support Services Unit, these changes are linked to broader shifts in the government organization as a whole. He explained that managerial ideas and practices are increasingly adopted by the organization to become more customer-oriented. He illustrated this with descriptions of changes going on such as the handing out of questionnaires to clients waiting for their transactions in order to evaluate their experiences. There were other examples such as accepting complaints and suggestions for improvement from the clients. There were also virtual banners rented out on the website to businesses that generated income for the organization. The IT manager also commented on his own personal experiences of interacting with the public sector in the past and how they have improved now and are more customer-oriented.

Performing like the private sector was informed by institutional influences. First, they were increasingly interacting with the private sector at work. This includes interactions

with companies from the private sector that are partners in the implementation of the e-government project. There were also members from private organizations that visit DM to attend workshops or to request assistance in using the new online services. This element to work made their jobs more exciting and they considered the members of the private sector as extended family (IT manager from Support Services Unit).

Working with the private sector and adopting international best practices is part of the development model in Dubai and its objectives of fostering economic growth and promoting the private sector. Historically, the business community has always had a significant role in the development of Dubai even before the formation of the federation, and is now considered to be partners in development. As such, the ICT professionals' actions of emulating the private sector are informed by the centrality of the private sector in the development of the city. It was important to meet their expectations and needs in public services through modernization of services and taking up new roles as modern ICT professionals.

International best practices were promoted through the relationship with the private sector and the set up of regulatory requirements by DeG. For example DeG has set up activities to plan and manage all the e-government systems in the public sector. One of the most influential activities by DeG is the provision key performance indicators (KPI's) for the project that were based on international best practices for e-government. The role of the KPI's in guiding the project are noted during an interview with an IT manager from the strategic planning unit:

So this is our direction for the next period and we learn from this. Our directions change every year and even our goals change every three years and the KPI's that we care about are changing every 2 to 3 years.

These KPI's guided their actions on the project and were the basis for reporting to the central agency on their progress. The role of the KPI's in the project was discussed by one of the business analysts in the Strategic Planning Unit:

There are a number of technologies that are used such as outlook and crystal reports. The Support Magic system is used for source data to generate reports on key performance indicators. (These) are sent to the central unit. I am responsible for sending out KPI reports. (Business Analyst from the Strategic Planning Unit).

As the ICT staff learned to work on the e-government project, they made sense of the numerous managerial concepts and ideas by experimenting with them and using them as part of their daily tasks. Performing like the private sector becoming more customer-oriented was shaped by interactions with the private sector. In addition to this, there were influential regulative mechanisms that were set up by DeG to ensure the quality of the online systems and services. Their actions were also shaped by the institutional structures for e-government and particularly DeG. For example, DeG played a role in managing the initiative focused on the objective of creating convenience and to introduce standards for the development and management of these systems.



### ***Becoming Part of the Global***

The implementation of the e-government systems was based on international best practices. There were several instances when the ICT staff took actions that were inspired by international trends and reflect broader efforts in Dubai to become part of a global system. The influence of international best practices is illustrated in the case study when one of the IT managers was searching for online sources and information that could guide the implementation process.

The IT manager from the Strategic Planning Unit explained that during the development of the e-government systems he scanned the environment for information on e-government. He explained that international competitions that rank e-government projects based on specific criteria represented a useful resource for guidelines to inform their planning activities. The significance of these global sources are described by the IT manager from the Strategic Planning Unit:

Not a source of ideas, but you can say, guidelines, more into quality guidelines, for example to participate in the competition for the best web site, they say the criteria for the best web site are... 1,2,3,4... so I (consider) these things (IT manager from the Strategic Planning Unit).

Reviewing the results from the competition was a way to know where they stand at an international level. The results were also a means to gain international recognition and legitimacy for their achievements on the project. The act of searching for international experiences is influenced by the diffusion of international best practices and working with international experts in the public sector. However, the ICT staff was selective in adopting the criteria presented in such international sources depending on their local needs and priorities in the project. The IT manager from the Strategic Planning Unit noted this process of adapting the information according to local needs:

I don't compare, I tell the group in development, any website takes care of things [...] and by the way there may be conflict, there may be priority... I wouldn't be able to

implement all (the criteria)...there may be things I think that are important and they are not (a priority), and nobody would appreciate it. We may have e-help like most services... is this needed and are people using it? (IT Manager from the Strategic Planning Unit).

As local actors sign up for online competitions, it is evident that there is a strong influence by Dubai's development model that employs international expertise to develop a modern city. As noted in Chapter Five, there has been a historical role for international experts in the development of the public sector and in planning projects over the years. Many elements from new public management have often been incorporated as a result of this cooperation. Similar patterns have existed in the Middle East region as a whole, where many projects for the past decades have involved working with international organizations and experts. As noted earlier in the chapter, the POGAR initiative was set up in the UAE that introduced managerial ideas and ICT use to reform public administrative systems. Also, many cities from across the world have adopted similar models and employed international experts and best practices to obtain standardized solutions, which has been labelled as a worlding trend in global cities (Roy 2009).

In sum, e-government and the new concepts and practices that were introduced by the management consultants included managerial rhetoric, international best practices and business models. These concepts were experimented with and taken up by the ICT staff in ways that were conditioned by Dubai's development model. Thus, the actions of acting like students, performing like the private sector and becoming part of the global involved taking up some of these managerial concepts to make sense of them. However, there were also instances where these ideas conflicted with existing institutionalized dimensions of the public sector in Dubai and alternative actions were taken. The way in which the ICT staff responded to the influence of competing institutions is described in the next section.

## **6.7 Localizing E-government: Conflict and Reconciliation with the Bureaucratic Context**

This section presents the influence of competing institutions on the actions of the ICT staff that contributed to localizing the e-government project. The earlier section outlined how some managerial ideas and practices, that are part of the e-government format, are locally experimented with and taken up. In this section, the aim is to show that there were also significant occurrences during the project where the e-government format competed with the local institutional arrangements of Dubai's public sector. This section shows that the dynamics between new and existing institutions led to conflicts with the bureaucratic context in Dubai. To resolve these conflicts, the ICT professionals improvised and developed workarounds in the systems that resulted in localized e-government systems.

The section outlines three examples of situations where the e-government format conflicted with the bureaucratic context and the actions that were taken to resolve them. The section presents the patterns of actions taken and the institutional influences that shaped these actions. The first example presents a negotiation with best practice models and conforming to the historical role of the public bureaucracy. The second example presents iterating between the local and a total virtual presence. This includes acknowledging the local traditions of bureaucracy. The third example presents reasserting ownership of the system and how these actions reinforced the role of the ICT staff as public sector employees that contribute to the development of the city.

### ***Negotiation with Best Practice Models***

One of the challenges encountered during the project occurred in the adoption of the service prioritization model for planning the e-government systems. The service prioritization model was introduced by the management consultants and represented a

best practice model that was based on international experiences. One of the former IT managers in the e-government section explained that there were several issues that came up during the early stages of the project. He was one of the people who were in favour of working with the management consultants, to learn from their international expertise and he respected their viewpoints and contributions. One of the main ideas introduced by the consultants was the service prioritization model that was used as a tool to guide the planning and implementation of the e-government system.

The model defines the order in which the online services are to be developed. According to the model, they should begin with government services that are highly visible to the public and are of value to them and DM. The model also requires beginning with government services that are simple and then eventually move towards the services that require integration across departments. A former IT manager from the e-government section explained the logic behind the service prioritization model:

The most important thing that came out of the strategy was [...] to set up criteria to prioritize these services, because if you have over 400 services. You cannot do them at the same time, you have to work on them in phases, and you have to use some criteria and some methodology. To justify why they are important [...] we decided (to begin with) the services that are highly visible and less complex, since e-government was very new to us and we did not want to fall in the trap of starting with something highly complex and failing (Former IT Manager in the E-government Section).

He went on to explain how the model guided the planning for the systems and in which order the services are developed:

We wanted to take the services in phase one to be services that are not highly complex, that we could do quickly, and visible so that many people can benefit from them. For example, it is not a service like street lighting it is not a visible service compared to paying traffic fines.

One of the main drawbacks of the model is that it underestimated the complexities of the process of planning for e-government systems. For example, the model did not account for the process of negotiating with managers from various departments that was needed to develop the online services. The planning for the development of an online service for

the no-objection-certificate was a clear example of the challenges of working with the best practice model. The no-objection-certificate (NOC) was one of the most complex services provided by the public sector since it required the client to obtain several authorizations from a number of government departments. The no-objection-certificate is often required for any person or company that is taking part in the development of infrastructure related projects that require authorization from a number of departments to proceed. There are often delays in gaining such certificates and they were affecting many people and businesses. He provided an example of the NOC service and how decisions were made early on in the project:

The NOC was one of the earliest services we worked with, even though I said in the beginning that we started off with the less complex ones. The NOC was an exception and everyone agreed in the committee that it was a big area, it is important for the growth in Dubai. It has a lot to do with the construction boom in Dubai. You can not start buildings unless you have the NOC [...] It started in DM with 70%, now they have moved to other government agencies such as the electricity and water authority and the national telecommunication company ITISALAT. In the past it was a complex procedure that could take up to 3 or 4 days. If you have no experience it was very confusing (Former IT manager at the e-government section).

The former IT manager in the e-government section explained that the managers from other departments were aware of the problems such as the delays that clients were facing during the processing of transactions. They were in favour of setting up systems that provide this service. He explained that starting on this complex service was highly controversial at the time, given the lack of experience in e-government and the importance of following the service prioritization model. He expressed his happiness that this theme was being explored in this research study, and this revealed that this was an important aspect of the project's history:

Another decision that was interesting was to give priority to the business community over services to the public. This was a somewhat controversial decision. We felt that the business community was easier to market the services to since we know who they are. They are equipped, especially since we are dealing with, contractors, consultants, food handling companies, etc. They had the IT infrastructures, the computers and the technical know-how to use these services. It was a very successful strategy and (by last year), we

almost had 100% adoption of services by businesses. Almost all the requests for services were coming through the Internet (Former IT manager at the e-government section).

There were several challenges faced in the adoption of the best practice models related to social norms in the public sector and institutionalized ways of working. The former manager in the e-government section explained the difficulties in negotiating plans with other departments:

To tell you the truth we had difficulties initially...there was a debate over which government organization is to pay for the service, also there was an issue of people not having time to work on a new project since they are preoccupied with their own projects. I am entering into the challenges, since I do not want to show you that everything is positive, you are doing research and the nature of things. We worked on overcoming these challenges...we have made a lot of progress Alhamdulillah, but maybe there are still some areas for improvement, such as issue of integration (Former IT manager at the e-government section).

There were other challenges discussed by the head of the Support Services Unit who discussed the ways in which local traditions of bureaucracy also generated challenges in implementing the e-government project as planned. During fieldwork, there was a loud discussion with another IT manager over delays in the project. He explained later in the interview that the bureaucrats from other sections who act as business custodians for services at time delay signing off completed projects (online application for the system). Even though the system met the requirements that were specified by the custodians, it was common for them to not sign off the project and request something else.

This was also discussed by the manager from Dubai eGovernment, who explained about the persistence of some social factors in the bureaucracy. For instance, he talked about how efficiency was a by-product of the e-government initiative, where automating a manual process would mean improving efficiency. And that it is not the technology that will improve efficiency, given the presence of social factors. He gave an example of public servants always tied up in meetings, and how technology adopted would not

change that, or improve the efficiency of service provision in that case. He then said that there is a debate currently on the need to set up efficiency targets.

He also commented on the employment of best practice models and presentations. The consultant manager from DeG stated that the academic literature did not provide useful guidelines and standards on e-government, which he found surprising. He then described the situation as “uncharted territory for governments” and how they are “re-inventing the wheel in government”. The international agencies often provide guidance, which is at such an abstract level that it is not “actionable”. He explained that a concept like the stages of growth model depicts this, for instance, applying this concept to e-payment would simply offer categories to describe what happens like interactive to transaction stages. This does not provide any guidance on how to improve the system’s quality. Later in the interview he commented on social factors that need to be taken into account. They like the presentations he had presented recently, whereas in the past, they might have disliked them. He also said that the governmental departments have to be involved themselves or else all of this will be on the shelf, and that bringing in an outsider is not always the best solution.

### ***Conforming the Historical Role of Public Bureaucracies in Development***

The IT managers were aware of the role of the public sector in the development of the city and this influenced the decisions they took during the planning of the e-government project. As noted in Chapter Two, the public sector in the Middle East region has the institutionalized role of facilitating and supporting the socio-economic development of the country. The public sector has played this role for decades since the independence of these countries (Jabbra 1989; Ayubi 1990; Al-Sayegh 1998; Davidson 2009; Hvidt 2009; Abdulla 2010). One of the aims of the e-government project was to improve public sector services, particularly for the business community who were deemed as important for the rapid economic development of the city. As discussed in Chapter Five, the

business community represents a significant institution in Dubai for many decades even prior to the formation of the federation. It was evident that the historical role of the public sector in developing the city informed their actions in the planning of the project.

There were social norms that were pervasive in the public sector that contributed to inefficiency. For example, the consultant manager in DeG explained that there were some public sector managers who were busy in meetings all day and this led to delays in conducting transactions. Other social practices such as the independence of each department in their work practices posed significant challenges during the planning of the project. Another example is the bureaucrats' delaying the signing off process during the project. The managers from various departments, who were planning these systems, were aware of the socio-cultural dimensions to public sector and that they are not easily changed with the e-government initiative.

From the vantage point of the IT managers, ICTs had the potential to resolve these problems that were experienced by both the public and the business community, mainly through simplifying complex services. They were enthusiastic to work on the NOC service in particular, since it was one of the most complex public services. There were often complaints that it was difficult to obtain these certificates, which were needed by both the public and members of the private sector. The NOC service involved going to various departments to complete the paperwork and was one of the most time consuming transactions. To work on these systems, the e-government team were required to follow the guidance of the international best practices model that was presented by the management consultants. The service prioritization model represented a generalized model for implementing e-government systems with a timeline for implementation and milestones and expected outcomes. The model suggests working on the simple and visible services first. However, from the vantage point of the IT managers it was important to begin with the most problematic services first.



In reality, the implementation of the project was shaped by socio-cultural attributes of the local bureaucracy that were overlooked in these standardized models. There were socio-cultural dimensions that caused delays in getting the NOC and that it was especially affecting the private sector's activities. The standardized model also did not fit with priorities. The IT managers preferred to work on the NOC first. This decision was influenced by the institutionalized role of the public sector in supporting city development. This legitimized the IT managers' decision to work on complex intra-organizational systems at the early stages of the project. Such an action meant that they were contradicting the service prioritization model that the management consultants promoted as the standardized way to work on these projects. This also reinforced the role of the public bureaucracy in city development.

In sum, the conventional paper-based system often involved red tape and delays. There was also the institutionalized role of the public sector in supporting the development of the city. They were eager to resolve the problem as soon as possible, since the private sector required these certificates to develop infrastructure-related projects and buildings, and such delays were costly to them. Therefore, the ICT staff's awareness of inefficiencies of the public sector in the past has contributed to embracing ICTs and international best practice models to resolve these issues. At the same time, the institutionalized role of the public sector in assisting in city development required them to negotiate with these models and adapt them to fit with local priorities of the public sector and city development.

### ***Iterating between a Total Virtual Presence and the Local***

The e-government project was aiming to provide 90% of online services over the Internet. This objective guided the implementation process, yet there were questions on whether these services will be taken up by the public at such an early stage. It was evident to the ICT staff that members of the public were still accustomed to conventional

ways of working and visiting the public sector organization. The ICT staff encountered the situation of the low take up of services at the early stages of the project and acknowledged the role of institutionalized dimensions of the public sector and that they need to be accounted for in such projects.

There were several initiatives to promote the use of the online services that were organized by the central agency DeG and DM. DeG promoted the use of online services in the media. DM initiated the zero-visit days to encourage people to use the online services instead of conducting paper-based transactions. As one of the IT managers from the Strategic Planning Unit noted, resolving the issue of the low take up of services was very important and they were eager to learn more about how to tackle the issue from researchers. In another interview, the consultant manager in DeG explained that it was important to have the public use the new systems since that represents a return on investment for all the effort that was placed in setting up these systems.

As noted by the IT manager in the Strategic Planning Unit, there was a strategy devised to deal with the low take up of services:

We have 4 directions for the next period, they were there but not as strategy. The first direction is to be more customers oriented, second point is 'p-p-p' private public partnerships, and the third is electronic transformation. What we mean by e-transformation is two big initiatives: the zero visits and paperless municipality, the first is concerned with external clients; although adoption rate is high we still think that people come (and visit the public sector).

Their understanding of the local socio-cultural norms in the public sector led them to question the possibility of having everyone use these online services within a short period of time. One of the IT managers from the support unit explains that he doesn't believe that e-government should replace the public sector organization. He showed me a report that was sent to him, it said that visits to the department have gone up by 220% ever since the project was started and that he was requested to look into this evident rise in visits. From his point of view, it is difficult to deinstitutionalize the public sector visit,

since society here is private they do not like everything to be online, and they also like to mingle with others in the public sector organization.

There were several solutions proposed such as the use of a manual system that runs alongside and in support of the online systems. Second there was a need to acknowledge the role of social norms. The third suggestion was to promote the idea of using online services to the public over a long period of time to institutionalize the idea. As the IT manager from the Strategic Planning Unit explained:

We see them, we have a study from customer service centre downstairs that in the first half of 2006 there was 220, 000 visitor to DM for different reasons, this is better than the half before that in 2005. There is improvement but a little, and we expect it to be 180, 000 [...] we want them to be zero we don't want people to come. There are different reasons people are coming, and we need to address them. With time we discover that it is not only about technology, it is more about culture, the type of business, more about confidence. Mainly it is for culture issues (IT manager from the Strategic Planning Unit).

He provided possible alternatives to deal with the situation by stating:

This is one of the things I learned here that the objectives change [...] For example, let all the people be talking about the e-government project, like the metro example, let people talk about it lets see the metro, once the metro is done, let the people use the metro, let the people feel that the metro is part of their daily lives...I want 90% to be online and the response rate to be high, to let people become locked in.

It was apparent that the ICT staff considered it important to promote the use of the e-government system by the public. However, they also took into account the social dimensions and institutionalized practices that limited the use of the online systems during the early stages of the project. As noted earlier, the ICT staff responded to these institutional influences and questioned the possibility of transforming the public sector with the concept of the total virtual presence, since it was still a new project. As an alternative, they suggested using the online systems as complimentary to the existing paper-based system for some time.

### *Acknowledging Informal Socio-cultural Norms in the Public Sector*

The actions of the ICT staff towards the low take up of online services were informed by institutionalized social norms in the public sector. As noted in Chapter Two, public bureaucracies in the Arab region share similar structural and cultural features to a large extent (Ayubi 1990; Ayubi 1996; Davidson 2005; Jabbra & Dwivedi 2004). Of course there are some variations given their unique histories and institutional arrangements. For example, countries in the Gulf have extended neo-patrimonial networks that are evident in the decision making process<sup>24</sup> (Davidson 2005). Several studies have described some of the cultural dimensions such as lax behaviour of public sector staff and patron-client relationships that create inefficiencies in the operation of the public sector (Ayubi 1990; Ayubi 1996; Davidson 2005; Jabbra & Dwivedi 2004). From the case study findings, there were institutionalized dimensions in the public sector that informed the way the ICT staff worked on the e-government project. These features include the value of the public sector visit and the importance of informal relationships and socialization.

The significance of the public sector visit for both members of the public and public sector staff was discussed in several interviews during fieldwork. For example, one of the IT managers from the Services Support Unit explained that even though there were significant changes taking place in the organization and the public sector as a whole, there was a need to account for institutionalized practices of the public. From his perspective, it was important for people to visit the public sector in order to socialize with others and catch up on news related to the city and its latest developments. There were also friendly relationships with public sector employees who provide these services to them or offered assistance to use the online services.

The public sector visit carries a symbolic value. Even members of the business community value these visits and the discussions that take place. Moreover, the ICT staff

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<sup>24</sup> The formal political structures are linked with the institution of the majlis, which is an informal institution where people meet with decision makers to discuss issues of concern

themselves while working on the e-government project built relationships with people who visit them to ask questions or to attend workshops on e-government. As noted in interviews, they now see themselves as an extended family. Members of the public and the business community visit the public sector to resolve issues or to complete a transaction and at the same time socialize with others. As explained in interviews, they sometimes come to meet with engineers to enquire about issues related to an infrastructure related service. Thus, even though the e-government systems offer convenience, there are still institutionalized practices and pragmatic issues that require visiting the public sector.

Another issue is that many people were accustomed to the paper-based transactions and found it difficult to use the online services. Within DM, the ICT professionals were aware of the issue of the low take up of online services at the early stages of the project. During interviews they offered explanations. In their view, one of the main reasons was that e-government was a new concept and not all online services could be conducted easily without discussions and assistance from the public sector staff. As one of the IT managers explained, there may be people who need assistance when it comes to projects that involve the city's infrastructure. This may requires reviewing a map and time to discuss some issues with an engineer. Another issue was that there were institutionalized practices of working with paper forms. The IT manager from the Strategic Planning Unit explained that there were people who do not mind being stuck in traffic and facing the difficulty of finding a parking space to visit the public sector, even though the online service is more convenient

There were initiatives taken by central institutional structures for e-government and the organization to resolve the low take up of the online services during the early stages of the project. These institutionalized dimensions in the public sector that include the value of the public sector visit and informal relationships have contributed to the low take up of online services in that period of time. These dimensions of the public sector were

acknowledge by the ICT professionals working on the e-government project and even informed the way framed and responded to the situation of low usage of services by the public during the early years.

### ***Reasserting Ownership of the E-government Systems***

The developers experienced some challenges while working on the development of online services. In the early phases of the project, there were several small bugs in the systems that were reported to them. There were problems in supporting the systems due to the incomplete documentation that was provided by the IT service providers. The ICT staff was caught between conforming to the guidance of experts and the need to resolve problems in the systems. This meant that they had to step out of their roles as students that follow international best practices and come up with a solution. As part of the effort to resolve the small breakdowns in the systems' operation they developed a coding template and checklist.

These actions were driven by a need to have a system working to meet the demands of the public, maintain their satisfaction and maintain an image of an operable e-government system to the outside world. The ICT staff innovated a solution to overcome the problems of bugs in the system and inadequate documentation. The development of the template was discussed by one of the system developers:

As a result of the problems, they now apply a different approach where they offer (the) vendor documents and guidelines which include a checklist (and) a framework, and from the Internet unit a checklist for deployment. This is used to ensure they are up to standard and they can be used as a record.

The development of the template was discussed by one of the system developers who worked on the coding of the template to guide the coding process. The development process involves mainly two tasks. First, offering guidelines/standards to the IT service provider team (The framework was not generic; it was for e-government activities). He

explained that the reason for introducing these guidelines was the discouraging experience they had in the past. The vendors developed systems that were not in line with a particular set of standards and this meant that they had to go back to designing and developing again. He explained that the website code was not maintainable at all and it needed to be more flexible. Second, they have is to review the code once the vendor hands it back to them. He commented how it was not easy to get vendors to adhere to standards, since they also have their say and they want to lay their ground rules. At the end of the interview, he commented that there was an IT forum where employees can add suggestions.

The head of the Development Unit explained that the situation of bugs occurred partly as a result of the objectives of speedy implementation. She explained that as problems in the systems continued to occur, they developed standards through developing a coding checklist and template:

This is like a long time ago, at the time everyone wanted e-government services to be published. Even the internal team did not even focus on this dimension, the main focus was to complete the development of services and publish them quickly. The standards were a low priority at the time. The project was implemented in phases one, two, three and four. There were some problems in the coding during the first two phases.

She also commented on how the IT vendor team did not meet their expectations as experts in the area of e-government:

They were in a hurry and did not have enough experience with e-government. They were learning with is and even the coding was not object-oriented, it was just java coding... Introducing the framework was a big jump for quality in phase three, even the number of complaints was reduced. The reports on issues with the systems are because they are the services that were developed in phases one, two and three.

In sum, the developers found themselves in a situation where there were problems in the system and little control over the development process. The coding template and checklist were an improvisation to the systems that improved the functioning of the

system and reasserted their ownership of the systems more than before. It was an artefact that introduced control and shifted power relationships in the implementation process.

### ***Reinforcing the Role of Public Servants in Contributing to City Development***

The developers' introduction of a coding template and checklist reinforced their roles as owners of the systems. It was also informed by the institutionalized role of the public servants who are contributors to the development of the city and the sense of prestige in taking part in such an initiative. As noted in Chapter Two, the position of a public sector employee in the Middle East region is often considered to be a prestigious position since it is associated with the development of the country (Ayubi 1990). Thus, in our case study, the role of an IT developer was enhanced while working on e-government systems since it was associated with a high profile project that contributes to city development. It was important for them to retain this position that they were proud of. The institutionalized role of the public sector employee informed the actions of the system developers, who found it important to set up these systems on time and to have them work efficiently.

These efforts were influenced by their role as public servants who contribute to city development. They were eager to regain ownership of the system, particularly as expertise was gained from working with the IT vendor team. Thus, this artefact was a means to regain their ownership of the system and reinforce their position as public servants. This perception of their roles was in contrast with the IT vendor team who considered this to be just another IT project. They did not associate themselves with the outcomes as much as the local ICT staff. The local improvisations and negotiations to improve the process of development was driven in part by this institutionalized role for the public sector staff to plan and manage the projects in ways that contribute to the development of the city. The objective of fulfilling their duty to create operable systems



and ensure the satisfaction of members of the public was often discussed during interviews on why they improvised a solution to resolve the bugs in the system.

## **6.8 Key Findings for Part II**

The second part of this chapter focused on the role of institutional influences in shaping the sensemaking of the ICT staff during the implementation of the e-government systems. The analysis showed how these institutional dynamics contributed in localizing the systems being developed. The section began by presenting the new format for e-government that arrived into Dubai's public sector in year 2000. The new format was mainly based on new public management and early generations of e-government projects that exist in developed countries. The section then focused on how institutional elements from the new format were taken up and experimented with by the ICT staff to make sense of what was new. The format for e-government was also a source of conflicts, since some of its elements competed with institutionalized dimensions of the public sector in Dubai. Local actors responded to these conflicts through improvisations that appropriated the e-government systems.

The format was transmitted, regulated and reinforced through various forms of institutional carriers. These carriers included the state mandate, the institutional structures that were set up to manage e-government, and artefacts such as key performance indicators. All of these represented a regulative pillar to instil both e-government and new public management in Dubai's public sector. The previous sections illustrated that the regulative institutional influence came to inform the ICT staff's actions of conforming to new ways of working with the central agency DeG, the management consultants and the IT service providers. The analysis showed how the local staff responded to such regulative influences by following guidelines and learning from the private sector. They were keen to make sense of the project quickly in order to meet the deadline and satisfy requirements of the e-government initiative.

The section also showed the role of a normative pillar that took form in the constant interaction with members from the private sector that visited the ICT team for assistance.

As part of the project, the ICT staff were working alongside the management consultants and various IT service providers. Interaction with these actors from the private sector primed the sensemaking of the ICT professionals in ways that led them to accept the customer-oriented ideas and to behave in ways that were similar to the private sector. The e-government format was transferred quickly into the public sector through these regulative and normative pillars to attain technical and organization change within an 18-month timeframe. Yet, there were also conflicts that emerged with Dubai's bureaucratic context. The case study findings show that there were powerful beliefs and norms related to the ICT staff's professional role as bureaucrats that contribute to the development of the city. Local traditions of bureaucracy in the country and the relationship of the public sector with the citizens and residents were still persistent. As illustrated in the previous sections, there was contestation between the new institutional elements of e-government and existing bureaucratic traditions and roles of the public sector organization. As noted earlier there was a contestation between the best practices and guidance of the private sector with local priorities such as working on complex services first, a need to acknowledge the value of the public sector visit and finally the importance of regaining ownership of the systems. The efforts of the local actors were focused on resolving these conflicts and this led to improvisations that localized the systems in subtle ways. For example, the localization process is reflected in the actions of developing a coding template and checklist or the adaptations to the international best practices and models.

## **6.9 A Summary and Conclusions**

The chapter presented the implementation of e-government systems as a performative process by taking into account the ongoing accomplishments by the ICT professionals over the course of the project. In order to show the series of enactments of the e-government systems, the analysis presented events that happened during the project from its inception until the point in time when the fieldwork ended in 2007. The analysis chapter was divided into two parts.

The first section presented a chronological account of the project based on the individual and inter-subjective sensemaking processes of the ICT professionals. The section traced significant events that generated a sense of uncertainty while working on the project and the responses taken by the ICT staff. The findings suggest that the individual drew on personal experiences of being in the private sector and early encounters with e-government to deal with uncertainty. Later on, there expectations of the management consultants and the IT service providers (as well as perceptions of themselves as owners of the systems) started to inform their actions as problems in the systems were experienced. The section on sensemaking provides insight into the retained meanings that emerged over time for e-government and their roles. E-government was initially a project that enhanced their roles in the public sector as staff that contribute to city development. The project was also a means for development at work and attaining personal aspirations. Later, the e-government project generated situations where their identities as owners of the systems were challenged.

The second section took these instances of ambiguity and responses and elaborated on the role of institutional influences. It began by a description of the e-government format, which included the state mandate, new public management concepts and norms and artefacts such as key performance indicators. The format for e-government was

introduced with the objective of modernizing the public sector through setting up an efficient online service delivery system and a creating convenience.

The second part shows how the ICT professionals, who were at the juncture point of drawing on their own experiences and understandings and responding to institutional influences, made sense of and took actions to work on the systems. The analysis shows us that regulative and normative institutional forces supported the sensemaking process, in concurrence with drawing on personal experiences and histories. The parallel process of localizing e-government, as contradiction and puzzles were encountered during the implementation, revealed the persistence of existing cultural and cognitive scripts, beliefs and norms that constitute the Dubai bureaucratic context and which informed their actions.

## Chapter 7: Discussion

This chapter presents the discussion of the significant themes that have emerged from the analysis of case study data presented in chapters 5 and 6. The primary aim in this chapter is to make a contribution to our understanding of e-government as a contemporary movement across the world, and in particular of the e-government projects and programmes that deliver e-government systems as processes of change within public institutions.

The chapter is comprised of four sections with the overall aim of contrasting the explanatory power of the theoretical approach adopted in this thesis (and extended and elaborated version of the TEF) with established analytical approaches of e-government. Thus contrasts are drawn between the engineering, managerial, and technical/rational approaches that dominate most literature on e-government with the social embedded approach adopted here. The social embedded approach is represented in a smaller but influential stream of work that draws on theoretical foundations such as ANT and Structuration Theory.

In this thesis the social embedded approach is framed through the TEF, which draws principally on institutional theory. The discussion focuses in particular on the perceptions of success for e-government projects and programmes (*ex ante* and *ex post*) and more generally how outcomes are accounted for. While conventionally perceptions of success (and the metrics used to measure) are shaped by the activities of planning of programmes and projects and through rational design approaches that seek to match

systems to context, in this chapter we seek to see further and deeper into the processes of change that are the inevitable core to such projects.

The Chapter begins by considering the traditional model's explanatory capacity, its ability to frame success and in so doing reveal more than narrow technical or direct organizational dimensions of outcomes. As we have seen from the case study, there is a wider set of institutional fields from which outcomes emerge, and our argument is motivated by an understanding that this breadth in outcomes should be incorporated into models of e-government.

The second section considers e-government outcomes from the perspective of the process of implementation, addressing how outcomes are attained over time and by individual actors' actions. In this section rational design approaches and perspectives of social embeddedness are discussed in terms of their differences but also of how they may complement each other as we seek to account for e-government outcomes.

The third section turns attention to the global dimension of e-government. As the case study in chapter 5 and 6 has amply shown, much of what is done in pursuit of e-government, and how it is done, is driven by ideas and materials that come from beyond the local setting. This includes idealized models of government, technology, and organizational practices and, in the case of Dubai, people. The analysis of the case study presented in chapter 6 strongly suggests that we need to explore how this 'package' of ideas, things and people (one that seems to be needed for e-government to happen anywhere in the world) arrives in a local context and is 'unpacked' and put to use. This section thus builds on Sassen's (2006a; 2006c) notion of 'digital formats'.

The final section the chapter presents a synthesis of these theoretical and analytical developments, presented as a development of the TEF.

## **7.1 Outcomes of E-government Projects: The Standard Model**

Chapters 5 and 6 explored how the implementation of an e-government project in Dubai's public sector unfolded over time and reached the State's objectives in terms of services available and timescales. This section focuses on how such outcomes for e-government projects are identified and how they may be understood. Sometimes outcomes will be seen as successes as was the case in Dubai, sometimes as failures as is found in much developing country literature, but also in the developed world too.

Thus, at that point in time when the fieldwork for this case came to an end, DM had developed a new web-based technical infrastructure and was operating workable e-government systems that citizens could and did use. All this had been achieved within the specified timeframe. Unsurprisingly, to most respondents or stakeholders this meant that the project was a success – and we would not wish to deny it. Rather, the aim here is to dig a bit deeper into how such an assumption can be made, or more generally how we frame our models of success for such projects. This is achieved by exploring the underlying assumptions (the epistemological framing) for measuring outcomes. First we consider 'conventional' assumptions about success based on technical and managerial rationalities – what we might call the 'standard model'. The section then considers success viewed through the lens of social embeddedness as used in the case analysis, and in particular the perspective offered by the TEF.

### ***Success from an Engineering Perspective***

As presented in earlier chapters, DM's e-government project was considered a success story. The themes of technical developments of a working infrastructure and web portal were at the centre of interview narratives and media reports. This rhetoric reflected the influence of an engineering rationality, which sees an e-government system as essentially



embodied in working technology and specified functionalities. The progress made in achieving this was seen as significant in Dubai and beyond, since at the time it was one of the earliest projects of its kind in the Middle East region.

So how did this technical rationality permeate into the public sector and why is it so pervasive? The relationship between the public sector and a small group of transnational IT service providers in the developed world has been a longstanding one and has been sustained by e-government programmes (Margetts & Dunleavy 2002). This relationship has generated a focus on assessing and articulating substantial and tangible end results for public sector ICT projects including specified functionalities, service levels and levels of usage. Various tools have been deployed to assess the end results of such projects, the most influential being the stages of growth models (Layne & Lee 2001).

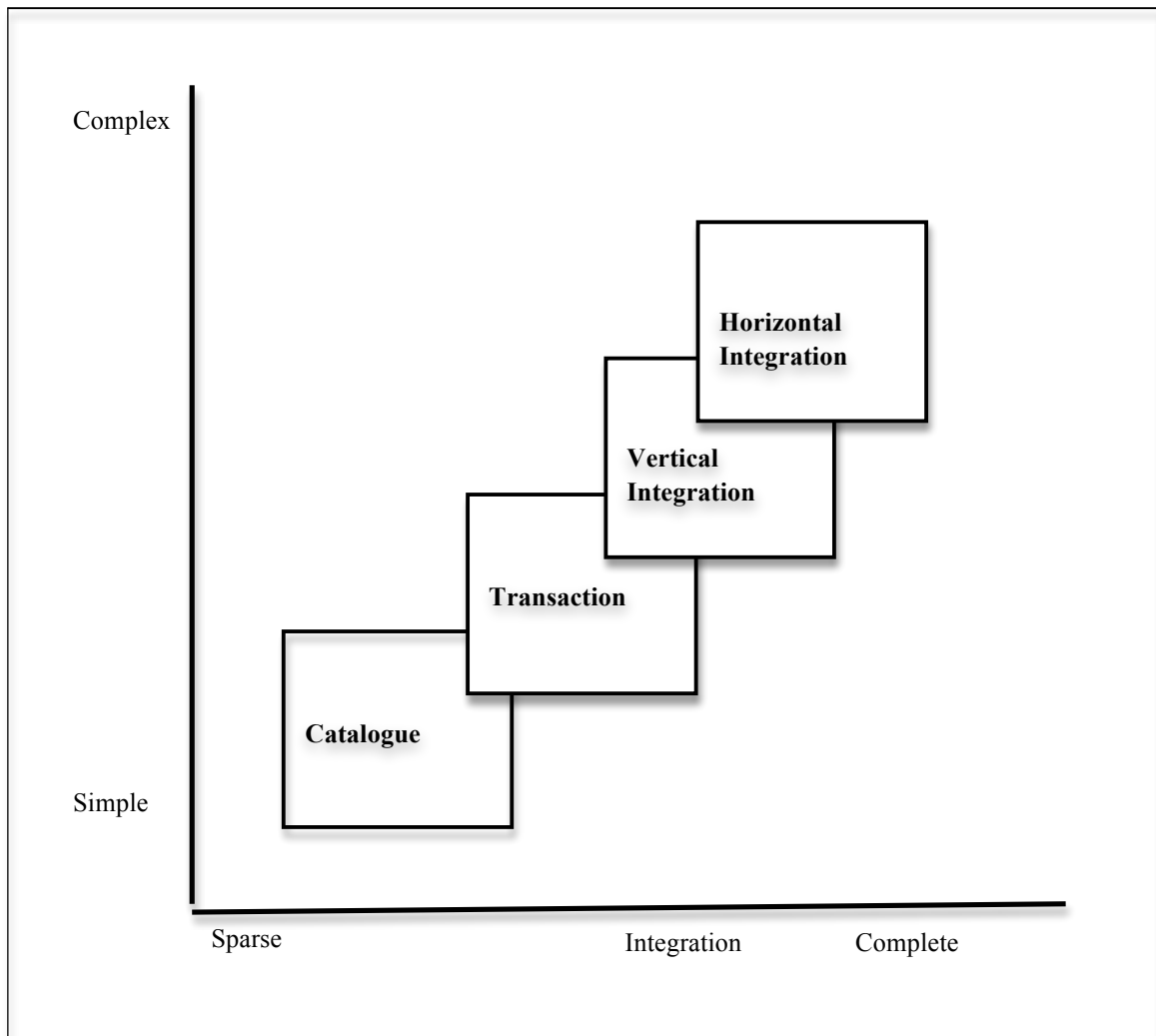
Such models present specific categories of systems that an e-government programme is expected to progress through (see Figure 7.1), and each type of system can be seen as a milestone to be achieved. For example, we find that the categories of web publishing and the creation of inter-organizational networks are abstract enough to be set as goals for different contexts, and for that reason these models are often promoted by international organizations and management consultancies in both developed and developing countries as goals to be achieved and hence tools for assessment of progress.

As the case study has shown us, most of the criteria for success in these terms are prefigured during the planning for an e-government project through balancing the conceptualization of international best practice with local pragmatic concerns. Reviewing cases from different countries reveals, alongside the technical focus on delivering working systems, the predominance of strong managerial and planning models that have become an inherent and necessary part of these projects. The planning process is the primary way that e-government takes into account local policy needs and organizational dimensions such as regulatory requirements within the bureaucracy,

existing projects, human and financial resources and the history of existing systems. However, even within such efforts to develop contextually relevant plans, the pervasiveness and legitimacy of certain managerial models (e.g. drawn from NPM) means that objectives and strategies are underpinned by a similar linear view of ICT led change and thus also look to technological based models of development.

In many programmes the definition of objectives and milestones (and thus the understanding of outcomes) has been influenced by the iconic stages of growth model. As discussed earlier in Chapter Two, these models initially were comprised of simple stages that were similar to those applied for e-commerce projects where the main focus is on a win concern with technical development and organizational changes so as to move from a simple static website to the provision of integrated online services through a reformed back-office function (Layne & Lee 2001). For example, the DM case study findings reveals that the framing of objectives and strategies privileges technological development to achieve efficiency and a clientistic culture, and based on this perception the project was an exemplar of success for others to follow.

Ofcourse there are some studies that criticize these dominant perceptions of success that focus on the 'technical' since they direct us away from the values of bureaucracy and local priorities (Cordella 2007). Cordella and Willcocks' (2008) study of the ICT projects in the NHS is illustrative of this, where they argue that there is currently a focus on values of efficiency more than effectiveness or on maintaining bureaucratic principles of equality in service delivery.



*Figure 7.1: Layne and Lee's (2001) four-stage model for e-government*

### ***Success and Organizational Design***

Success in e-government projects is considered partial if the motivation is directed only towards the development of a technical infrastructure. The case study findings suggest that even after the setup of these systems, there were some lingering concerns about obstacles in integration between government departments. There were also challenges in dealing with the relatively low take up of online services by the public, by the time fieldwork was completed in 2007. Thus, it was not only technical achievements that counted, it was also the extent in which desired organizational changes were accomplished.

Management consultancies, international organizations and academic researchers have become an intrinsic part of the e-government institution. As such, they are institutional carriers of e-government ideas across national contexts. They are actively shaping perceptions of success through instating a managerial logic in planning and evaluation of these projects. There has also been a role for new public management in spreading these ideas, with a renewed pervasiveness, as e-government projects diffuse to many countries. Following the private sector's advancements in the use of ICTs to serve the customers through the development of e-government seemed like a natural progression for the public sector. For example, the case study showed that actors' actions and narratives include the concept of 'the customer', a clientistic culture and notions of efficiency. This responds to the state mandate that emphasized the objective of creating convenience to all those that interact with the public sector as well as reflecting the influence of NPM.

Strategic alignment ideas and stages of growth models have become indispensable resources for devising plans and strategies for e-government. Public sector organizations require assistance from IT companies and management consultants in order for them to set up workable systems within such a complex landscape. They are engaged in numerous general projects that have to be developed within regulatory requirements.

Thus, planning involves balancing priorities and making compromises. The case study findings illustrate that there was awareness of how little expertise they had in the area of web-based technologies at the time.

The decision to involve experts from the private sector in the planning and development of the systems was necessary to ensure quality, to meet the project deadline and to transfer knowledge and expertise to local staff. Second, most public sector domains are embedded in institutional arrangements that necessitate working with management consultants who use these models, given the history of their involvement in new public management programs and IT. In some cases there is also an involvement of international development organizations that have adopted a similar set of ideas and rhetoric. There is an evident role for new public management and its emphasis on working like the private sector, which makes adopting such practices, models and rhetoric legitimate when working on e-government projects.

Consequently, it was predictable that the project studied here had objectives that were shaped by ideas of ICT and organizational design. The case study shows us that outcomes were very much framed in terms of progress in the traditional model by Layne and Lee (2001) and is based on organizational changes that enable inter-organizational networks and integrated service delivery. Similarly, strategic alignment ideas often underpin strategies devised by management consultants working in the public sector. Thus success was also based on achieving a state of alignment between technology and the organization. Such a concept underpins notions of “e-government readiness” which has come to dominate many of the international organization and management consultancies discourses and evaluations of projects across countries.

As discussed in Chapter Two, the idea of strategic alignment has been adapted from the private sector to fit within the public sector by focusing on reaching a state of alignment between ICTs and the two dimensions of internal processes of the public sector

(Fedorowicz et al. 2009) and the external environment (Davison et al. 2005; Gil-Garcia et al. 2007). This was illustrated in the case study findings, as managers were keen on finding alignment between the new systems and the organization through negotiations and integration of work processes. At the same time, there were efforts to change the external environment through creating educational programs and devising zero-visit initiatives to encourage the take up of these services. We find similar approaches discussed by Davison *et. al* (2005) in the case of Canadian e-government initiative which has involved policymakers setting up national IT training programs and modifying regulatory requirements and legislations to adapt for e-government.

Still this managerial logic offers too narrow of a view to plan for challenges and observe changes that result. The case study findings show how these models may introduce objectives that can conflict with institutionalized dimensions. For instance, the idea and target of a total virtual presence for the government department was initially difficult to achieve given the existence of local socio-cultural norms of interpersonal relationships between staff and the public and the symbolic value of the public sector visit for the public. Another issue to consider is that the focus on linear change can lead to overlooking local improvisations to practices and technologies. As such, conceptualizing change as a linear process does not account for the iterations between planning and implementation of e-government systems. As noted in Chapter Six, the project's objective of change in technology and the organization led to underestimating the need for interventions and negotiations between government departments. This is of significance in the public sector where ICT projects operate according to policies, regulatory requirements and other priorities. For many of the public administrators involved in e-government, other public sector projects may be considered as more important and relevant to invest time and resources in.

### *A Snapshot of an Indefinite Process*

Inherently, implementation is not only shaped by the social context, but also has wider consequences for the durable relationships between actors and institutional arrangements. Similar to the TEF that was employed in this study, there are other theories that are based on the assumption of social embeddedness of actors such as Structuration and ANT. These offer insight into the performative dimension of e-government projects. Adopting such lenses means moving beyond a view of linear progress across categories that define success and failure and instead embracing the dynamics of an indefinite process.

Such a processual view of e-government implementation requires taking a snapshot of the process within a particular timeframe for a closer examination of the broader outcomes of these projects. For instance, studies that employ an ANT lens would be inclined to see outcomes on a wider scale. For that reason, the end result of projects is framed in terms of alignment of interests. For example, Walsham and Sahay (1999) frame outcomes in terms of the acceptance of a GIS by local authorities as an obligatory passage point and the alignment of interests between the scientists and GIS vendors. Another example is Heeks and Stanforth's (2007) study of e-government in Sri Lanka that describes success as the acceptance of an e-government framework by various actors in the network. Similarly, in this study the focus was on capturing an ongoing process of implementation that was shaped by local actors and institutional dynamics.

The processual view shows us that there are variations in plans and strategies for e-government not only because they address local needs and priorities but are also subject to institutional influences. In many cases, e-government projects tend to reproduce existing structures. This theme was presented in Walsham and Han (1993) who present the case of computer projects in government agencies within a developing country that

reproduced the top-down approaches and central control in how the strategy was crafted, therefore administrative staff's involvement in the design of the system was minimal. In the same way, the case study findings illustrate that both new public management ideas and bureaucratic procedures are shaping planning. The case study findings presented in chapters 5 and 6 suggest that the planning involved following a stages of growth model and incorporating bureaucrats as the business custodians and owners of the system who have the power to sign off the project upon completion.

As presented in this thesis, the outcomes are seen in terms of reinforcing existing social structures through the actions of development and design of these systems. Such patterns were observed in this study through the employment of the TEF. The IT managers engaged in negotiations with other bureaucrats to surpass the service prioritization model and begin working on the significant complex service early in the project. This reproduced the role of the public bureaucracy in supporting the business community and contributing to city development.

Through the lens of the TEF, we see the case study's success in setting up a technical infrastructure as only part of what happened. Perceptions of success and expectations were crafted from the early stages of the project and were defined in terms of reaching milestones that were guided by stages of growth model. The process of shaping ex-ante perceptions of success is influenced by the institutions of new public management and e-government, which were reproduced through the ICT staffs' actions of emulating the private sector and acting like students. These institutions also play a role in the shaping of ex-post perceptions of success and evaluations once the project was completed.

The TEF goes beyond viewing outcomes in terms of technological developments and organizational changes and instead focuses more on the institutional consequences that are taking place. As such, obstacles during the re-engineering of the organization and subtle breakdowns in the systems would not be read as failure but as part of a



sensemaking process, as local actors encounter new ideas and practices from the private sector. Their actions are seen as an effort to resolve situations of ambiguity that result from overlapping institutions of local bureaucracy and new public management. The TEF invites us to reinterpret findings of success and failure that occur in the context of developing countries to see them as part of an ongoing process of reproducing institutions as well as reconciliation of overlapping institutions. Thus, outcomes are depicted as a performative process of sensemaking that contributes to institutional continuity and change, as discussed in this research.

## **7.2 Explaining E-government Project Outcomes through Different Theories**

This section explains the processes that led to outcomes of success and failure in e-government projects. The aim is to provide insight into the explanatory power of the technology enactment framework (TEF) employed in Chapter Six to explore this process. There are few interpretive studies of e-government that explore the process of implementation by focusing on the nuances of local actions and how they are institutionally conditioned. Through the TEF lens, the implementation of e-government systems is either shaped by actions that reproduce institutions or by actions that respond to tensions that are generated by competing institutions.

This section considers the theme of implementation in three ways: the conventional engineering perspective, the managerial perspective and the socially embedded perspective. From the perspective of social embeddedness, the TEF provides insight into how local actors make sense of and enact planning and implementation in an institutionally conditioned way. Two arguments are presented in this section. First, I propose that the TEF presents a richer conceptualization of how implementation unfolds and outcomes of success and failure are reached through its emphasis on the performative dimension. As such, the TEF depicts the institutional influences on action and the dialectic relationship between institutional dynamics and organizational change. Second, the TEF's depiction of ICT development and use as linked to institutional dynamics reveals that the setting up of e-government systems is embedded in at least two temporalities. The setting up of e-government includes the faster paced development of a technical system and managerial practices that runs alongside a slower paced cognitive institutionalization of values and ideas that accompany these projects.

### ***Implementation as a Technical Endeavour***

Seen through the lens of strategic alignment and the stages of growth model, the case study of DM exemplifies a conventional implementation of e-government systems that ran relatively smoothly. The e-government systems were developed over four phases that corresponded to the criteria of the stages of growth model, beginning with the static website and moving towards complex integrated systems. The ICT professionals conformed to this phased approach to implementation and targeted their efforts to the developments of a number of online services by the specific intermediate milestones.

As illustrated in the case study findings, that there was a significant amount of learning that took place along the way, and there were several actions taken to respond to problems encountered during the implementation of the project. The public sector employees worked in parallel with the IT service provider team who were more experienced than them. There were some challenges in the area of collecting requirements, since some business custodians requested services that were difficult to incorporate into the systems. In addition to that they also encountered problems in the initial programming practices of the IT service provider team that generated bugs in the systems. There were also some challenges in obtaining authorization to sign off the completed projects (systems for online services), since the custodians would request further changes to the functions of the systems after signing off. Finally, there was the significant challenge of negotiating the re-engineering of work processes and integration across departments.

### ***Implementation as Organizational Redesign***

We might see all these issues as a problem to be solved within the broader technical led project. Or we could see them as central to the construction of a new way of working in DM, as a new way of relating to citizen as client. Thus, we can see the project as not of technological construction, but of organizational redesign. From the outset, expertise was

required to plan the development of the system and manage the transition in the organizational changes that were underway. The management consultants in particular were enrolled into the project for this purpose, to support the formation of new work arrangements for local staff. The management consultants' expertise was understood as invaluable for DM, given the tight deadline and limited expertise in the area. In accordance with the strategic alignment ideas the objective was not only to set up the systems, but also to reach the state of alignment between the ICTs and the organization through re-engineering practices and work processes. This alignment was seen as a means to instantiate the vision of a transformed public sector with integrated services and inter-organizational systems.

However, the conceptualization of e-government systems through the management consultants' models and presentations showed that they were somewhat unfamiliar with the socio-organizational contexts they were working with. For example, the management consultants interviewed members of the organization to learn about work processes when they first arrived, and the data gathered was used to construct the operational readiness model. The management consultants also underestimated the amount of negotiation and intervention required to achieve change and the institutionalized practices of bureaucrats that generated delays. As noted during interviews, one of the main challenges was negotiating between managers of different departments to set up inter-organizational systems given their different priorities and difficulty in changing institutionalized work practices.

### ***Implementation as Socially Embedded***

As noted in Chapter Two, publications from international organizations and management consultancies often adopt engineering and managerial perspectives to discuss the topic of implementation of e-government systems for various international contexts. This thesis has shown that the TEF offers a distinctive value in understanding the implementation of e-government systems beyond such generalized models. In parallel to this view, there are

other theories that have substantial influence in the field of e-government that are underpinned by notions of social embeddedness of ICTs.

Studies that use Actor Network Theory as a theoretical perspective present a different vantage point on the implementation of e-government systems. The implementation process is seen as essentially performative. Rather than seeing implementation as a set of activities that takes place in isolation, and as part of the project plan, it is considered to be part of a larger scheme of networks. The action taken during implementation are part of the ongoing efforts by various actors, both macro and micro, that maintains (or weakens) a network that surrounds an IT project. The implementation is then shaped by the alignment of interests of various actors and their negotiations and acceptance, or resistance, of obligatory passage points.

The employment of ANT is illustrated in Walsham and Sahay's (1999) study on the development and deployment of GIS in India's public sector. The study shows implementation as being shaped by tensions between a US aid organization, scientists and developers as interests differ. The theme in many ANT studies is that the implementation of e-government systems unfolds as part of a larger network of interests. The network is being maintained or reconfigured through the various negotiations and interests of actors. ANT does not offer mechanisms to examine the people at the centre of these projects, which is the focus of this thesis. Unlike TEF that centres on actors and their enactments, ANT is inclined to focus on the network as a whole, or to privilege one or two interest groups. Also, as noted by Walsham (1997), ANT provides insight the local and contingent but offers a limited analysis of the broader social structures. In this thesis, the TEF is employed to access the world of local actors and focus on their actions. This enables us to examine which elements of institutions are reproduced and which pose contradictions to be resolved to fit within the socio-organizational context.

The socially embedded nature of implementation of e-government is also apparent through an institutional theory lens. Institutional influences inform the actions of all who work in government, such as the planners, developers and support officers working on the project, and this is a theme in several studies of e-government. For example, Fountain's (2001) presented the example of trade systems and military systems that were developed in ways that retain the relationships and power of various actors. Similarly, Azad and Faraj (2009) develop the theme of reproducing institutionalized roles in their study of a land registration system project, where negotiations took place to introduce manual authorization alongside electronic ones to retain power structures. Both these examples have similarities with the case study findings, where the implementation involved reproducing elements of bureaucracy (and new public management) that existed before.

The case study findings presented in the previous chapter are not only about reproducing the existing ways of working. The findings are also about the conflictual nature of change as new and old institutions meet. This too is a recurrent theme in information systems studies. There are studies that illustrate situations in which values inscribed into e-government can generate problems in use, particularly in developing countries that import technologies that originate from western contexts (Heeks 2005; Walsham & Sahay 1999). This is also illustrated in case studies of healthcare systems where NPM policies and managerial practices are inscribed into systems which are in contrast with the physicians professional identities and institutionalized practices (Caronna 2004; Jensen et al. 2009). Therefore, any e-government project, with its constitutive parts of private sector and government actors, and artefacts themselves, are all active carriers of different institutional regimes that may lead to institutional dynamics, contradictions and conflictual processes of change.

### *As seen through the TEF Lens*

The TEF offers a rich conceptualization of how these e-government projects unfold at the local context as new institutional elements of the project are understood and appropriated to local institutions of the public sector. The TEF, is similar to other perspectives on social embeddedness, and offers insight into three aspects of implementation. First, the theory enables us to see *what happened* by focusing on local action that surrounds the design, development and use of ICTs. As the case study findings illustrate, we were able to trace the micro level actions that were taken in response of significant events over the course of the project and to see distinctive patterns of behaviour. For example, the ICT professionals were found to conform to new public management ideas such as viewing the client as ‘the customer’ during the early stages of the project. At later stages, we are able to trace different patterns of behaviour where the ICT staff was inclined to take actions that assert their autonomy and ownership of the systems. Both of these patterns of actions contributed to shaping the progress of the project, the systems and work practices.

Second, the TEF also guides us to see *how and why* this process occurred. The TEF presents actors as being guided by the individual understandings and experiences they have as well as the institutions they are embedded within. Therefore, these actions were influenced by individual aspirations of having an exciting job and their inter-subjective understandings of the project and their roles as public sector staff and ICT experts. They were also shaped by the dynamics between new institutional influences of e-government and NPM and existing local traditions of bureaucracy that define their roles and the public sector. The employment of the TEF in this case study revealed that the implementation of the project was shaped by responses to competing institutions, both new and old. Also, the TEF enabled us to see that as a result of these competing institutions, there were temporal patterns that are part of implementation for the construction of technical systems and for the cognitive institutionalization of new ideas and norms associated with e-government.

The TEF's focus on the enactment of technology as performative carries some limitations. The TEF presents an ongoing process of enactment to present the shaping and institutionalization of technology through action. However, theorists of technology argue that we need to account of the material nature of technology and that there are limits to systems being shaped through enactments (Kallinikos 2002). Moreover, the TEF's emphasis on performativity does not provide enough insight into technical design and managerial planning. These are inherent parts of any e-government project that need to be accounted for to understand how and why the implementation process unfolds the way it does.

### ***Implementation as Shaped by Competing Institutions***

One of arguments presented in this thesis is that competing institutions result in contradictions and conflicts that trigger instances of improvisations. Thus, the process contributes to emergent innovation in e-government systems and organizational change. There are many studies that focus on the dynamics between new and existing institutions that generate conflicts and emergent change (Avgerou & McGrath 2007; Lanzara & Patriotta 2007). In the case study of DM, e-government projects acted as carriers of new public management ideas that interacted with existing institutional arrangements of bureaucracy, role of bureaucrats and local socio-cultural norms of informality in relationships. This theme is presented in Avgerou and McGrath's (2007) study of the Greek public sector's computerization projects, the bureaucrat's values of having a good life contrasted with the engineering rationality and values of efficiency inscribed into the new systems. In the context of healthcare there have been many studies that have discussed how new IT systems threaten the institutionalized professionalism of physicians and their autonomy, and how this can create resistance (Caronna 2004; Jensen *et al.* 2009).

The case study findings indicate that there were similar institutional tensions. For example, the implementation process was fraught by contradictions and puzzles



generated from the overlap of old and new institutions. The local actors at the heart of the implementation process, and who are subject to these institutional influences, experienced these conflicts and eventually moved to find resolutions to them through workarounds and local improvisations. In DM, the staff tried to appropriate new public management in ways that fit with how they perceive their roles and the status of bureaucracy as a contributor to development and its relationship with the public. The improvisations that led to localizing e-government systems in DM support Avgerou's (2001) argument that institutional contexts generate diversity in outcomes rather than homogeneity.

### ***Implementation as Reflecting Temporal Patterns***

Another significant argument in this research study is that the implementation of e-government systems reflects two parallel temporal patterns. Indeed, perhaps the most distinctive feature of the e-government projects is the theme of speed. Speedy implementation of a technical infrastructure is part of the story of success and is related to how the public sector operates in Dubai. In many ways, this is similar to Margetts (1991) description of the fast and the furious approach to development of the NHS ICT projects in the 1980s.

The findings in Chapter Six reveal that there were consequences from adopting this speedy approach to implementation. DM's e-government systems were setup on time to meet the state deadline, and were conditioned by the culture of speed in public sector projects in Dubai as a whole. The involvement of the private sector further supported this logic of speed. However, the cognitive institutionalization of e-government's concepts and norms was a longer process. As indicated in Chapter Six, the ICT professionals exhibited different patterns of behaviour towards the end of the project. Initially, they took up and experimented with the new scripts of following international best practices that arrived with the e-government project. At later stages of the project, they began to draw upon existing scripts of being professional bureaucrats and adhering to the socio-

cultural systems to resolve problems in the systems and conflicts with the bureaucratic context.

Thus, there are two temporal patterns that run in parallel. First, there is the speedy construction of technical systems. Second, there is also the formation of cognitive scripts, and this is part of the institutionalization of e-government systems. These patterns are present in many ICT projects across domains and countries. On the one hand, technical elements are constructed according to the plan. Practices, norms and cognitive scripts are institutionalized over a longer period of time. The cognitive dimension is sometimes masked by the success in technical developments of the projects and efforts to align the people with the technology through organizational interventions such as business process re-engineering and change management.

Considering the temporal patterns shows that that e-government implementation is an ongoing process of institutional alignment. On the one hand, the speedy construction of technology and the deployment of new organizational change programs are supported and legitimized by the regulative and normative institutional pillars for e-government. This includes the state mandate, institutional structures for e-government and actors from the private sector. On the other hand there is the slower paced alignment of the cultural and cognitive pillar for e-government that is far more complex.

### **7.3 Accounting for Innovation and Emergent Change in E-government Projects**

This section discusses the relationship between institutional dynamics, ICT innovation and change in the public sector. As discussed earlier in this chapter, institutional influences have led to homogenizing trends in e-government objectives, strategies and approaches that have been adopted across different countries. The issue that arises is: how can ICT innovations that are meaningful to the local contexts of countries emerge in such circumstances? Also, how can these ICT innovations emerge and take form within the constraints of existing institutional arrangements in the public sector that tend to resist change?

This section is comprised of four parts. First, the section discusses institutional sources for ICT innovations, which are seen to constitute e-government formats. Second, the section discusses how the local design and shaping of these formats takes place. Third, the section discusses where ICT innovations can be located within dynamics between new and old institutions. Finally, the section concludes with a summary. I argue that ICT innovations that are meaningful to local public sector organizations emerge from the dialectic relationship between new and old institutions, and from the efforts of local actors to work out puzzles and conflicts that they have come across as a result of these dynamics. This conceptualization of e-government moves beyond views of e-government implementation as a linear process of change in technology and organizational elements. This view contributes to institutional analyses of e-government projects, which have often see institutions as constraining the development and adoption of innovation, by proposing the case for institutional dynamics as triggers for actions that lead to meaningful ICT innovations.

### ***Sources of ICT Innovation***

This section discusses the role of the institutions of new public management and early generations of e-government as sources for ICT innovations in the public sector. Several components of these institutions have formed the e-government format that travels across countries and domains. I argue that these institutional sources have generated and reproduced logic of innovation through ICT in the public sector.

As discussed in Chapter Two, new public management ideas have been influential in the adoption and use of ICTs in the public sector, since the late 1970's in most western countries. With the strong association between NPM and the private sector, it was a natural progression to follow private sector trends of using ICTs to improve levels of efficiency and costs cutting. The values of efficiency, cost savings and customer orientation in the public sector were legitimized through political discourses and policy agendas, as illustrated in joint services and the whole person approach ideas in the UK's NHS. However, there were variations in how NPM was adopted and localized in each of these western contexts. As Flynn (2002) explains, NPM concepts were used as a diagnostic tool for different problems in each context. Similarly, experts and international organizations promoted NPM ideas founded in the west as a diagnosis and solution for problems in developing countries. The discourses of international organizations facilitated the transfer of NPM ideas, however adoption of these ideas was in a piecemeal fashion (Polidano 1999).

E-government is often presented as a natural progression to new public management, given the overlap in values that both institutions are centred on. E-government just like NPM focuses on values of efficiency and customer-orientation and employs ICTs as well. E-government is also seen as building on existing projects in the public sector that were part of NPM policies and as employing existing artefacts such as legacy systems

that pertain to an earlier period. This theme of extending the past is expressed in Cordella and Iannacci's (2010) case study of a UK e-government project that was based on a previous NPM policy agenda with values of NPM inscribed into the project.

E-government is also different to NPM in many ways, and this shows that they are distinct institutions that have come to form an alliance to shape ICT innovations in the public sector. First, e-government as an institution is based on principles of centralization and needs based holism, which comes in contrast with NPM's emphasis on decentralization of the public sector, where the latter focuses on the market mechanism, privatization and independent local agencies (Dunleavy *et al.* 2006). E-government also emphasizes engaging in ICT innovation projects more than any past initiatives. There is also a focus on organizational change and transformation in service delivery and in modes of governance more than earlier NPM initiatives. ICTs are often promoted for their power to transformative potential, and for that reason e-government is seen as carrying wider implications that are beyond the internal workings of the public sector. For example, e-government is often seen as a means to build stronger relationships with the IT and management service providers and even as a means to build relationships with the public and the global community.

Formats for e-government are comprised of elements that are part of the institutions of new public management and the early generation of public sector IT projects. As noted in Chapter Two, there are many e-government projects that are built upon past NPM initiatives, either working in an organization with legacy systems from a previous era that is inscribed with older policies (Cordella & Iannacci 2010) or working with the implications and complications that earlier NPM projects have generated (Dunleavy *et al.* 2006). These formats also consist of similar values and norms such as efficiency, cost saving and customer orientation.

These values and norms are introduced via change agents such as the state and its institutional structures, management consultancies and IT companies whose involvement is increasingly gaining momentum and weight in the public sector. They also have to do with public management education that is based on these values and principles. This is reinforced even further through the engagement between the public sector and education institutions, which represent powerful institutional networks that support these NPM ideas and extend them into e-government. Formats involve a style of organizing that is strongly predicated on a certain set of technologies and is presented as such – spoken of as such – see it as a bundle. Technology is not incidental- technology is fundamental. These formats are mobile and arrive in the context of various countries and local actors engage with them.

Upon the introduction of these formats, a new logic of innovating in the public sector is instated, more than the earlier NPM initiatives. There have been several historical ICT projects that have not generated espoused objectives of change such as improved levels of efficiency and new work practices. I argue that it is through the engagement with these formats' elements – the artefacts and new ideas such as best practices - that this logic of innovating is legitimized, reproduced and sustained in the public sector. These formats for e-government are increasingly becoming indispensable, taken for granted and institutionalized.

Moreover, e-government introduced a new status for ICT at the centre of these projects, and not on the periphery as in NPM projects. ICTs are seen as central to the image of modernization as well as catalysts for change in work practices and relationships with the public, the private sector. In the context of developing countries ICTs are considered important to sustain relationships with the global community of international organizations and international business companies.

In summary, new public management and e-government are powerful institutions with components, which comprise the e-government format that has travelled across countries and public sector domains. These formats did not only shape how objectives and approaches to set up these projects were framed, they also instated logic of innovation in the public sector and a more central status for ICT in the organization. I argue that these formats arrive into the public sector and local actors engage with them, and through their actions they were reproducing this logic of innovation in the public sector, even if objectives of efficiency and cost saving are not met.

### ***The Design and Shaping of Formats***

There are constant calls to tailor information systems to specific contexts and e-government is no different. E-government which is aligned with the states, and involved many actors within and beyond focal organizations, the issue of fitting with local contextual features is more significant. So far there is still no strong analytical framework to address global influences on e-government and how they are encountered and appropriated at local contexts.

This section discusses the role of formats in e-government. Chapter Six discussed how these formats are constructed in part from the components of NPM and early e-government projects. Formats are subject to semi-configuration at a global level and national level. Then subsequently, they are enacted and then instantiated at local organizational level through actions by people who encounter them and engage with their components. Across national contexts, we find similar formats for e-government and this involves comparable objectives, strategies, approaches and artefacts. The case study reveals that even though formats are designed and configured for homogenous results, local appropriation of formats takes place leading to variations across contexts.

Therefore, e-government formats are subject to configuration by several actors at both the global and national level and this shows that the institutional dimensions and influences on planning of these projects take place within a broader context. It is important to account for what shapes formats to show to what extent they are malleable, what institutional forces are at play and their influence on how they are designed and enacted. Adopting the format perspective provides insight into why e-government projects are different. The outcomes of these e-government projects include success, failure, resistance and innovation. These outcomes cannot be adequately accounted for by only studying how a system was technically developed. What is required is to trace back how these formats are designed and locally enacted, which is where the elements



are accepted, appropriated, rejected and slowly these formats are shaped as well. Formats for e-government are subject to design by global and state level actors. Chapter Three has established that these formats are socio-material bundles that are based on a specific set of principles and components – technological artefacts, certain norms or values and practices. The spread of these formats makes them part of a homogenizing force to create similar objectives, ways of working and outcomes for e-government projects. For example, there are common objectives of transparency, accountability and good government.

Yet, even though they are part of this trend, they are each distinct. The design and configuring of formats at a global and national level determines what kind of artefact is deployed in these formats – modern large scale information systems that are imported or developed in-house, integrated across government departments or standalone systems or whether they are built from scratch or on an existing infrastructure such as a legacy system. Another aspect that is configured relates to how work is to be conducted to set up and use these systems and this may involve introducing the private sector or building on an existing network with them, or introduce experts from international organizations for guidance. Finally, the formats also includes values such as managerial norms as indicated in case studies of IS in healthcare (Jensen *et al.* 2009) and in the case study findings the values emphasize convenience. In other contexts formats can includes norms of transparency and accountability that contribute to public administrative reform and socioeconomic development.

Formats are also shaped by state policies and actions. The balance of the components of formats is often determined at the national level to cater for local institutional arrangements and address local issues and prevalent discourses. This involves determining which of these components is more central and carries more weight. This component can be the source of legitimacy to introduce the format for e-government. For example, the focus on technology construction according to international best practice

and within a short period of time was central in the case study. In contrast ICT projects in the UK's health sector have been more focused on values of efficiency and managerial norms. The format lens shows that planning for e-government goes beyond the organizational context and is subject to a myriad set of institutions. However, this does not determine the use and impact of these format, these formats are subsequently shaped through engagement of local actors with their components.

The variations in these formats can be understood as a strategic deployment of a tool to diagnose and resolve a problem. This is similar to Flynn's (2002) argument about NPM that it is contextually shaped and deployed to diagnose and resolve problems depending on local institutional arrangements. What sets an e-government format apart from NPM is that it is more than the output of policy. There is also the semi-configuration of technical and social elements grouped in a bundle that can be strategically deployed to fit national and local issues, discourses and arrangements.

Formats for e-government move across the world in uncertain institutional carriers. These are then instantiated when they enter public sector organizations and managers and staffs engage with them. It is this process that involves agency in the middle of these institutional influences of the new and old. The formats are shaped as technological artefacts are planned, developed and have a higher status in the public sector's plans. Local actors' engagement with formats largely reproduces them and thus provides the momentum for them to spread to other domains in the public sector or countries. For example, public sector organizations work on e-government projects, and this fuels the identification of new best practice ideas and provides exemplary case studies.

Within the organization, some components of the format may become easily accepted, since they do not challenge existing ways of working. Elements that are accepted may build on an existing past, for example, older ideas, policies, and artefacts, or aligned to existing aspirations. But, as the case study findings show, e-government projects may

challenge existing values, norms and scripts on how to conduct their work. This may generate conflict and responses of resistance or resolutions. There may also be puzzles that emerge from competing institutions that local actors work out, resist or ignore. I argue that formats call for sensemaking and experimentation with all that is new. Once this engagement with the new ceases, the format is taken for granted and forgotten it is either appropriated and institutionalized or ignored. In either case the implications are that these components are built upon for future formats.

In summary this section has shown us that formats are malleable structures that have been shaped through rational design by global actors who align interests and in response to institutional forces at play. There are efforts to make these formats within a particular context fit with formal and informal institutional arrangements, local policies, etc. As the thesis shows, formats for e-government are subject to sensemaking to many of its new components. Actors may accept certain elements that build on historical components and extend them, and do not challenge ways of working. They may resist those components that seem to compete with values and norms that they consider to be important.

### ***Locating ICT Innovations within Institutional Dynamics***

This thesis showed that there is a relationship between ICT innovations in the public sector and institutional dynamics. So far this chapter has established that the implementation of the systems was through following engineering and managerial models of best practices as well negotiations, improvising in work practices and tinkering with the systems. These innovations are part of a continuum of potential outcomes; on the one end there is failure to set up technical systems and projects are abandoned, on the other end there are workable e-government systems that are institutionalized. The case study findings show how the e-government systems were locally shaped to become meaningful ICT innovations within Dubai's public sector. ICT innovations in the public sector are caught between institutional processes at play. They are in between the new and existing, where there are actions of conforming to the new

concepts and practices along with actions to retain the historically constituted ways of working and thinking in public bureaucracies.

Many are sceptical of the view that e-government formats generate desired transformation and solutions to longstanding problems in public administration (Fountain 2001). E-government is often associated with carrying the potential to change the public sector's relationships with the public and to contribute to substantial social and economic development. However, many are cautious about making such claims and argue that a more plausible set of implications for e-government formats is encountering institutional arrangements such as bureaucracy and socio-cultural norms that are difficult to alter. E-government is seen to be similar to NPM trends across many developing countries, as a continuation to a pernicious importation of ideas and practices that do not fit with local structural and cultural dimensions of the public sector in developing countries. Thus, sceptics see NPM and e-government as introducing superficial changes that will not significantly alter institutionalized dimensions of the public sector.

As claimed in many institutional studies, e-government systems are not significantly contributing to change but are reproducing power relations, institutions and organizational forms. Fountain (2001) and other institutional analysts propose that e-government systems can be set up in ways that reproduce existing institutional arrangements. The case study findings suggest that there are dynamics between e-government formats and the local institutions through a local process of sensemaking. From this process, new elements are introduced. For example, values of the customer, efficiency and speed are all part of new public management and have found a place in the world of the ICT professionals studied in the project.

I argue that the interactions between e-government formats and the local recalcitrance of bureaucracy and socio-cultural dimensions of the public sector actually contribute to the emergence and shaping of ICT innovations in the public sector. This study presents e-

government implementation as not merely the acceptance of NPM and/or e-government or the persistence of bureaucracy. NPM ideas and principles are adopted in a ways that do not challenge bureaucratic dimensions of work. Thus, paradoxically, e-government projects come under the transformation umbrella but sustain existing ways of working and power relations through these institutional dynamics. However, taking a closer micro level look at how e-government systems are enacted reveals that even reproducing institutional orders through e-government involves a dialectic relationship between ICT innovations, institutions and change.

I have argued that another way of conceptualizing e-government systems implementation is to see them as embedded in institutional dynamics that shape ICT innovations rather than constrain them. This view is important because it comes in contrast to views of ICT innovation as a product of managerial and engineering perspectives that define the steps to take and objectives to reach. It also contributes to institutional analysis of e-government that often shows how these projects reproduce existing institutional arrangements rather than changing them. There are subtle changes that are taking place as actors work out puzzles and conflicts and actors attempt to find resolutions and improvisations to the systems and practices which contribute to the shaping of ICT innovations that are localized and meaningful to local actors.

## **7.4 A Synthesis of Theoretical Concepts: The Technology Enactment of Global Formats Framework**

Exploring the ways in which the ICT professionals in DM enacted the implementation of the e-government systems was analyzed through the technology enactment framework (Fountain 2001). The TEF was a starting point to understand ICTs, actions and institutional change in the public sector. As noted in Chapter Three, there was a need to elaborate on two of the TEF's constructs: Enacted Technology and Institutional arrangements. The elaboration involved drawing on theories of sensemaking (Weick 1979; Weick 1995) and institutions (Scott 2001). The TEF was enhanced through the addition of the theoretical concept of global formats (Sassen 2006a; Sassen 2006c). This section presents the extended framework, labelled as the Technology Enactment of Global Formats Framework (TEGFF), that represents a synthesis of the TEF and the concept of global format (See Figure 7.2).

Most of the elements of the TEF framework have been retained, with three main modifications made in the new framework. First, the construct of Enacted Technology in the TEF includes sensemaking and situational scripts that are drawn upon by local actors. Second, the construct of Institutional Arrangements in the TEF is detailed to show regulative, normative and cultural- cognitive pillars. Third, the newly arrived format is depicted in the model in three stages of transition: as part of the global arena, as part of the organization, and as a worked out format that is part of outcomes of the project.

The TEGFF shows how and why people take actions when working on globally inspired and guided ICT projects. The framework depicts the interaction between the newly arrived format for e-government, existing institutional arrangements and enacted technology (that involves agency). The formats are depicted before and after they arrive into the organization. At the global level, e-government formats are semi-configured by global actors, who use ICTs as tools to standardize the performance of organizations.

These formats are also semi-configured further by change agents who act as institutional carriers and transmit them into organizations.

The framework presents in detail what happens in organizations that implement e-government systems, which is the focus of this research. The figure shows the *process*, as formats contribute to sensemaking and organizing processes by local actors in the public sector. The new e-government format introduced new ideas, norms and ways of working. This is of particular relevance in the context of developing countries that adopt new ideas and practices and experience challenges. As noted by Heeks (2005) the design-actuality gap in the implementation and use of e-government systems in developing countries. As the figure shows us, the enactments of local actors are also subject to institutional influences.

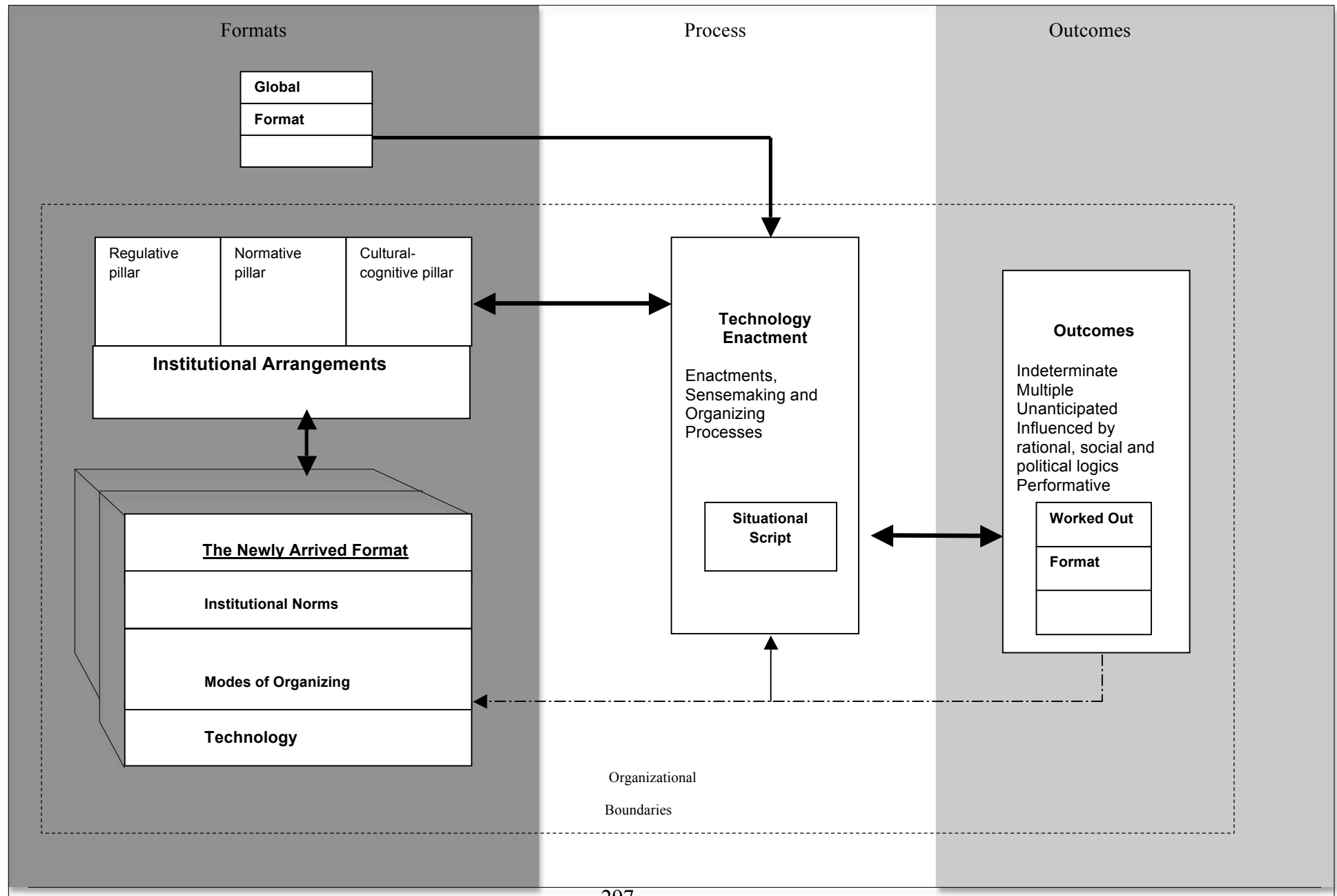
The Figure 7.2 also depicts what happens in the organization in terms of the “outcomes” of these projects. The outcomes are seen as performative. They emerge from the local actors’ ongoing sensemaking and organizing that respond to the influences of the e-government format and existing institutional arrangements of the public sector. The outcomes include the technical and organizational achievements such as new work arrangements and the status of the technical e-government systems. At the same time the outcomes here refer to cognitive dimensions such as the ongoing accumulation of retained experiences and social cues and scripts. Finally, these outcomes also include a worked out format that emerges from the actions of local actors as elements of it are accepted and taken for granted (or not). As Figure 7.2 shows us, the worked out format over time can eventually become sedimented and institutionalized.

The enacted e-government systems reflect a process of changing in the public sector, rather than change. This is indicated in the TEF’s construct of outcomes as performative. This reflects a shift from the conventional perspective of before and after, to observing an ongoing state of flux, to assess ICT projects. Such a view is based on Weick's (1979;

1995) emphasis on the performative through concepts of sensemaking and organizing that focuses on perceptions of social cues encountered by local actors, who in this case are the ICT staff. As a result, this triggers an ongoing and cumulative process of changing in the way they perceive situations and act and how organizing occurs while working on e-government systems.



Figure 7.2 The Technology Enactment of Global Formats Framework



## **7.5 Summary and Conclusion**

This chapter was a discussion of emergent themes from the analysis chapter. The first section elaborates on the theme of perceptions of success and how they are identified in ex-ant and ex-post based on different theoretical perspectives. The section shows how adopting a performative lens such as the TEF moves beyond categories of success and failures and captures institutional changes that are taking place.

The second section discusses how these outcomes are reached, by taking a closer look at the process of e-government implementation as depicted in various theories. The section considers technical, managerial and socially embedded perspectives of implementation. The section discusses how implementation can reproduce existing institutions or can be shaped by tensions from overlapping institutions.

The third section shows that ICT innovations emerge and are shaped in the public sector in the midst of institutional dynamics between the new and the old. The section began with a discussion on the sources of ICT innovation in the public sector, and here the institutions of new public management and e-government were presented as composing powerful and mobile formats. The section then discusses how these formats are shaped through design and then subsequently through enactment by actors who engage with them and then appropriate elements of them. The section then discusses that contrary to perspectives that see ICT innovations as a product of conforming to managerial guidance and reaching specified objectives, the case study revealed that ICT innovations emerge from the institutional dynamics and contradictions that the actors find themselves in. The argument is that ICT innovations that are locally meaningful are not born from strict conformity to technical and managerial models and guidance but from actions that resolve contradictions and puzzles that emerge from overlaps between the e-government format and existing institutions of the public sector.

## **Chapter 8: Conclusion**

This research study was initiated with an interest in exploring the lived experiences and perceptions of people, from the public sector, who were working on the implementation of e-government systems. E-government projects in the Middle East region were new and novel at the time of starting this research. E-government is often presented in the literature, media and publications of international organizations based on managerial models or macro-level perspectives. The research question focused on how people at the center of these projects encountered new ideas and practices that arrive with e-government projects and made sense of them as they worked on the development and management of these systems. The research questions were also concerned with understanding the implications of their perceptions and actions on the outcomes of the project.

The earlier Chapter Six provided a theoretically informed answer to the research question posed at the beginning of this thesis. Chapter Seven then positioned key findings derived from analysis within central debates on e-government and organizational change. At this point we open up central themes further and show links to broader dimensions, i.e. theory and practice. This chapter begins with a summary of chapters presented in this thesis. This is followed with an overview of theoretical and practical contributions and limitations of this research. Finally, the chapter concludes by presenting the future of e-government projects and identifies questions to be addressed in further research.

## **8.1 Reflective Summary of Chapters in the Thesis**

Chapter One presented an introduction to the thesis. It outlined the main theoretical research question that guides the investigation and then provided three empirical sub-questions. The themes include: enactment as sensemaking and organizing processes, the relationship between technology enactments and institutional dynamics experienced in the Gulf region, and the implications of actions on the project and the actors' ways of working and thinking as they work on e-government. The chapter provided an overview of the conceptual framework employed and the case study.

Chapter Two presented the literature review that was based on the intersecting themes of e-government, organizational change and ICT implementation. The literature review was comprised of two main parts: conceptualizations of e-government and perspectives on IS implementation in the public sector.

The chapter began with a brief history of computerization in the public sector with some studies that focus on the Middle East region. The chapter then moved to present studies that present e-government as means for strategic change. This has been a powerful discourse that has influenced the ways projects are planned and perceived by policymakers, managers from the public sector and even ICT professionals working on these projects. In contrast to the strategic change ideas, there are studies that emphasize e-government and cultural persistence. This was the third theme in this section that focused on institutionalized dimensions of the public sector. The section draws on some examples of the Middle East region and e-government.

The chapter then moved to present theme of IS implementation in the public sector. The second section presented the theme of implementation in terms of organizational perspectives, institutional perspectives and finally agency-centered perspectives. The section began with an overview of managerial and organizational concepts employed in studies of IS implementation in the public sector. As the research has shown us, there

were many actors involved from both the public and private sectors who adopted such an organizational and managerial perspective. The section then discussed the role of policies and social structures such as socio-cultural norms in the development of these projects and their outcomes. The section concludes with an overview of studies that focus on agency in the shaping of the process of implementation and outcomes. This research study contributes to the two themes of macro-level and agency-centered perspectives on IS implementation. The research showed how locally situated actions while working on the development of e-government systems are influenced by broader institutional dynamics at play.

Chapter Three presented the Technology Enactment Framework (Fountain 2001). The chapter elaborates on two of the TEF's constructs. First, the construct of Enacted Technology is elaborated on through Weick's (1979; 1995) concepts of sensemaking and enactment, which are constituent theoretical concepts of the framework. Second the construct of Institutional Arrangements is elaborated on using Scott's (2001) work on the nature of institutions and how they travel. The chapter presents an addition to the TEF, which is the concept of global formats (Sassen 2006a; Sassen 2006c) and how it relates to e-government studies. The concept of formats takes into account the arrival of new institutional elements into the public sector that are encountered and appropriated.

Chapter Four presented the research methodology that guided this research. This chapter started off with the conventional overview of interpretivism and social constructionism to reveal the foundations of the epistemological position discussing why these assumptions were relevant to the study of ICT professionals' enactments. One of the key ideas was that the research processes was exploratory in nature in order to access the unfolding processes of enactments and change that is accessible via an interpretivist account. The chapter then shifts to the voice of the researcher to provide a confessional account of how the research was conducted. This explained the evolving research question as I iterated between theories and field data. I also outlined issues and

reflections encountered during fieldwork such as how the interviewees perceived me as a researcher. Finally, an overview of data analysis was presented to show different tools employed such as ATLAS for organizing historical data and data that pertain to the background of the case study, and finally how tabular analysis and extensive descriptions were used.

Chapter Five presented the case study. The chapter presented a background to the history of Dubai and the UAE as well as an overview of political structures of the federation and public administrative reform projects. The chapter then presented an overview of Dubai's e-government initiative to outline the institutional structures for e-government and objectives. The chapter then presents a narrative of e-government system implementation, which is based on a historical reconstruction of events from the early stages of using web-based technologies in 1998 until the full-fledged e-government system was set up. The chapter presented early activities prior to the arrival of the consultants, then the process of developing a strategy and shifts to work arrangements in the IT department. The chapter describes the three phases of implementation of the system, concluding with outcomes.

Chapter Six presented the theoretical analysis of data in two parts. The first part mainly employed notions of sensemaking and organizing (Weick 1979; Weick 1995) to analyze actions of ICT professionals as they encountered situations that were marked with uncertainty. Three periods were identified and they include: initial encounters with e-government, progress in the implementation of the project, and closure of the project and beginning the new. This section of the analysis focused on events and responses by the ICT staff over the course of the project. Their responses reveal a selection of new and existing scripts to take action that shaped the outcomes of the project and its meaning.

The second part of Chapter Six focuses on how sensemaking is shaped by institutional arrangements. New institutional influences of e-government and NPM were presented.

The chapter then moved to discuss how the ICT professional made sense of the management consultants' concepts in ways that were conditioned by Dubai's development model. The chapter then discusses conflicts and reconciliation within the bureaucratic context that drew from local traditions of bureaucracy and socio-cultural norms in the public sector. The actions of negotiating with best practice models, iterating between local and total virtual presence and reasserting ownership of the system development all contributed to the localizing of the e-government systems.

Chapter Seven presented a discussion of themes relevant to e-government that are informed by the findings in this study. The chapter began with a discussion of perceptions of successful outcomes that are shaped in the early stages of planning and then instantiated in assessing outcomes. The chapter then moved to explain outcomes of e-government project by discussing the process of implementation. Implementation is discussed through three theoretical lenses: the technical, managerial and socially embedded perspectives. The chapter then discussed the sources of ICT innovations in the public sector, how they are shaped as new formats arrive. Finally, the relationship between ICT innovations and institutional dynamics was discussed.

## 8.2 Revisiting the Research Question

This research study was concerned with exploring locally negotiated ways of working on the implementation of e-government systems. A central theme in this research has been the people working on developing and managing these large-scale e-government systems as they make sense of new sets of ideas, actors and technologies. With this objective in mind the following research question was articulated:

*How do the ICT professionals enact the implementation of e-government systems and what are the implications of this process on the project outcomes and the people themselves?*

The research question addresses a gap in the relatively new field of e-government. The field is mainly comprised of studies that adopt functional and managerial models and offer normative suggestions to guide and evaluate the implementation of e-government systems. There have been few studies that adopt an exploratory approach to examine the process of implementation and present theorizations of e-government (Coursey & Norris 2008).

The thesis was an exploratory study on how e-government systems were implemented successfully in one of Dubai's public sector organization. The objective was to focus on the world of the ICT professionals, who were central to the construction and management of these systems over the period of nearly a decade as they encountered a series of significant events and ambiguous situations over the course of the project.

The research question is based on the Technology Enactment Framework (Fountain 2001) employed in this study. For the purposes of this thesis that aims to address the role of the ICT professionals, the two constructs of the TEF, which are institutions and enacted technology, have been elaborated upon through the concepts of institutional pillars (Scott 2001) and sensemaking (Weick 1979; Weick 1995). The theoretical



concepts revealed to us how the system and the project unfolded through the actions of the ICT professionals, who were at a junction point. On the one hand, they are drawing upon personal and inter-subjective experiences, understandings of the project and their roles. On the other hand, their actions are informed by existing formal and informal institutional arrangements that include local traditions of bureaucracy, informal socio-cultural norms and a history of new public management initiatives. In the case study of Dubai, the e-government project, and the people working on it, was also subject to the influences of new institutional elements through the arrival of management consultants, IT service providers and international organizations.

At the early stage of the project, the ICT professionals encountered new ideas associated with e-government such as new work arrangements, the employment of international best practice models and concepts of the customer. The actions of the ICT professionals reflected a general acceptance and conformance to these new ideas and practices. They were drawing on a new script of being modern ICT professionals that involved learning from the private sector staff and from their own experiences of past jobs in private companies. From this came a retained meaning for e-government, which was seen as a project to learn from, that contributes to achieving personal growth, a source of prestige in society, and is part of city development and becoming part of the global community.

The behavior of the ICT was to a large extent conditioned by a history of public administrative reform projects that were inspired by new public management ideas. A history of NPM-related projects promoted notions of quality and the client since the 1990's. These projects often involved international experts to assist in evaluation and offer guidance. During the later stages of the project, subtle breakdowns in the system and contradictions between the e-government project and the local bureaucracy led to different patterns of enacted technology to appear. The implementation process involved resolving conflicts in the context of the bureaucracy and developing resolutions and local innovations to the systems.

Through the sensemaking lens, we find that the ICT professionals' accumulated experiences of working on the project led to experiencing puzzles and contradictions within the bureaucratic context such as a misfit between the best practice model and local needs and the tensions between creating a total virtual presence and retaining local traditions. There were situations that involved unmet expectations for the management consultants and IT service providers, which generated a sense of low autonomy in the development process.

This involved drawing on institutionalized script of being part of the local bureaucratic system with its cultural dimensions and historical role in the development of the city, as well as being part of the socio-cultural system in society where informal relationships exist and where the public sector carries a symbolic value. The sensemaking process contributed to negotiating with new models of best practice, and resolving issues surrounding delays and low take-up of the online services. The ICT professionals were also reasserting their ownership of the systems and the development process. From this process a local meaning for e-government systems emerged where it was a localized system that fits with the role of bureaucracy in city development and operates within the constraints of the cultural dimension of bureaucracy in the region.

### **8.3 Contributions**

There are four main contributions for this research study. First, the theoretical approach adopted here carries significant explanatory power that compliments technical and rational approaches conventionally adopted to guide and study e-government systems implementation. Second, the adaptation of the technology enactment framework, detailing two of its constructs (enacted technology and institutional arrangements), and the addition of the concept of formats makes it particularly useful to analyze the implementation of e-government projects in developing countries. The adapted TEF conceptualizes the ways in which the semi-configured socio-technical packages that are introduced into the public sector are made sense of and appropriated by local actors as they work on developing and supporting e-government systems.

Third, the thesis operationalized the adapted TEF model to the case study of Dubai and empirically. This explained the process of change associated with e-government implementation and how outcomes are assessed. The TEF generates an understanding of the process of developing an e-government system in Dubai and framed the outcomes in ways that contrast with the management consultants' reports that focus on technological and organizational developments. The empirical study revealed to us the role of wider institutional implications for the existing bureaucracy and the form that new public management takes in Dubai as a result of engagement in e-government. The extent in which e-government is institutionalized, the new role for ICTs in the public bureaucracy and changes to ICT professionals perceptions of their roles have also been detailed in this study as part of the implications of the implementation process.

Fourth, the operationalization of the TEF presents how ICT innovations in the public sector emerge through sensemaking and responses to competing institutional structures. The theme of institutions often brings to mind stability and resistance to change. In this

study, the TEF captured the dynamics between old and new institutions and how this contributed to local improvisations and localization of the e-government systems. The case study has shown that e-government systems are shaped by local actors' actions as they make sense of puzzles and contradictions that competing institutions generate. It is through this process that ICT innovations in the public sector take form and become meaningful to local actors.

## **8.4 Limitations**

This research presents findings that are based on a slice in time, from when the researcher ended fieldwork in 2007. The implementation of the e-government systems is still ongoing, and this is evident when we consider that there was a new project initiated to change the system platform by the time the fieldwork ended. There have also been various changes to institutional structures for e-government in Dubai since that time. The TEF the implementation of these e-government systems as part of an indefinite process of technology enactment, and this research only presented a snapshot to evaluate what happened within a particular time frame.

Another limitation is that this research study was concerned with conceptualizing a process of implementation of e-government system and it is not focused on answering why success and failure happened. The focus was on developing a theoretical understanding of the process of implementation more than presenting substantive knowledge. The empirical data was used to develop this theoretical understanding of how the process unfolds more than producing specific explanations and assessments for this category of projects.

## **8.5 Future Research**

This study employed an adapted form of the technology enactment framework, which is an abstract theoretical model that can be employed in other research to conceptualize a generic process of e-government system implementation. Future research can employ the context specific knowledge presented in this study. One possible area to examine is what aspects of bureaucracy contribute to the shaping of the e-government systems? Also which elements of new public management become embedded and features in bureaucracy as a result of the enactment of the e-government systems?

Another possible area of research is to employ this analytical device to develop a substantive theory and context specific knowledge on the relationship between e-government and public management. For example, to examine the ways in which e-government systems are contributing to changing (or reinforcing) public management in the Gulf region or other countries. A future area research is to explore what is achieved from the process of enactment of e-government systems and what challenges exist.

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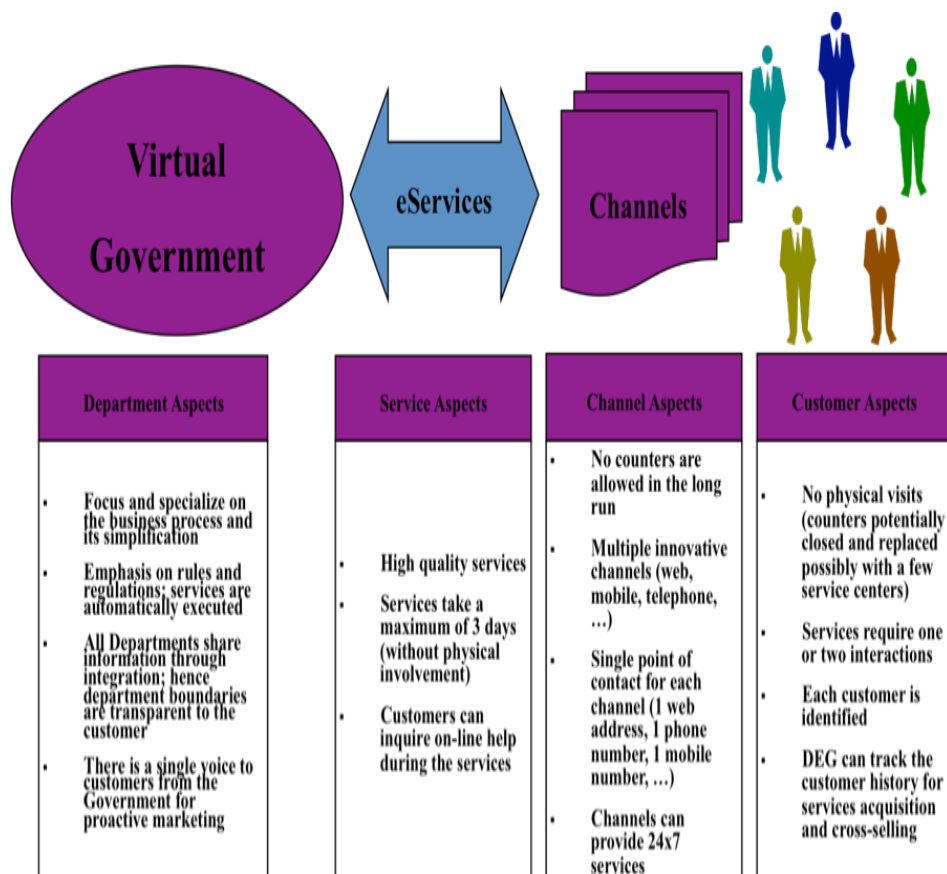
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# Appendix 1: A Model that depicts the vision for Dubai eGovernment

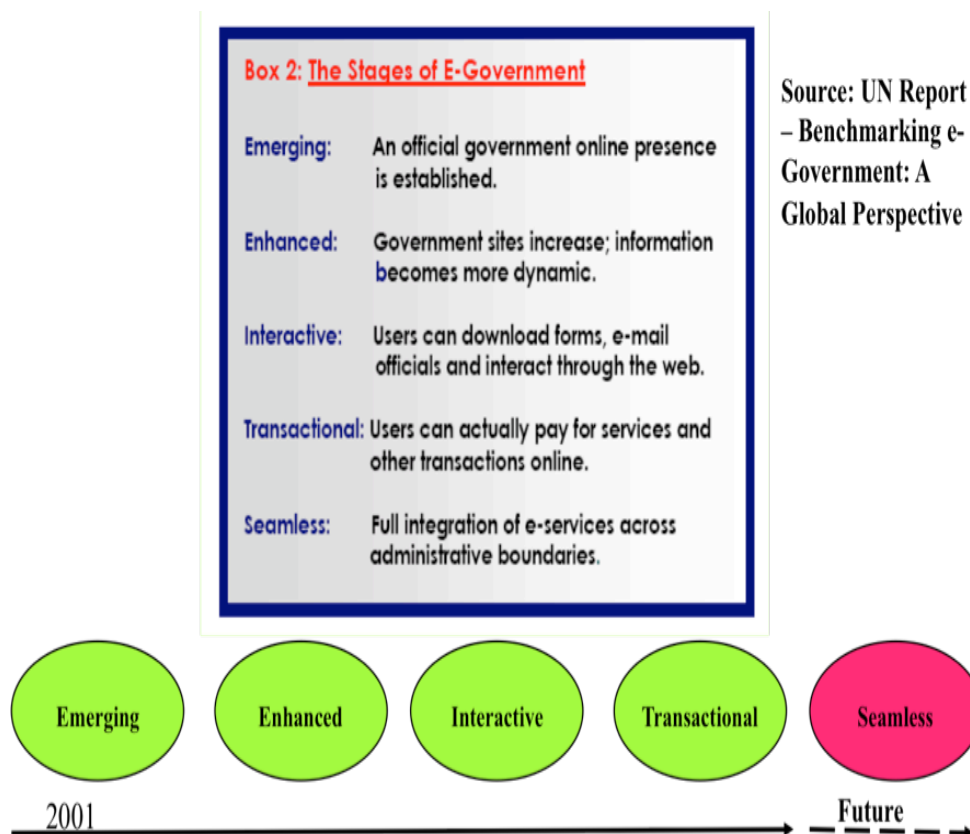
A model depicting the role of Dubai eGovernment in the management and coordination of projects.



Source: Presentation by Dubai e-Government 2005



## Appendix 2: A Stages of Growth Model presented by Dubai eGovernment



Source: Presentation by Dubai eGovernment 2005

## Appendix 3: A Table of Dubai e-Government Strategies

Strategies	
Operational	<ul style="list-style-type: none"> <li>• Adopt a consistent centric design and development.</li> <li>• Offer an evolutionary multi-access and delivery channel system.</li> <li>• Carry out a comprehensive customer focused services re-design for excellence in service provisioning for each prioritized service to be e-enabled.</li> <li>• Conduct an extensive community outreach programme to reach a high rate of adoption of e-enabled services.</li> </ul>
Organizational	<ul style="list-style-type: none"> <li>• Create a value-based and cultural centric Dubai e-Government Organization.</li> <li>• Develop “Strategic Performance Management” in order to link performance and award management to overall vision and strategic goals of Dubai e-government.</li> </ul>
Financial	<ul style="list-style-type: none"> <li>• Dubai e-Government should aim at a positive and not present value.</li> <li>• Dubai e-Government should consider Government funding sources as well as external funding sources.</li> </ul>
Information Technology	<ul style="list-style-type: none"> <li>• Utilize leading e-technology as the key enabler for improving the delivery of government services online to citizens, residents, visitors, businesses and government(s).</li> <li>• Provide trusted IT system over a common infrastructure for e-Government services.</li> </ul>
Legal	<ul style="list-style-type: none"> <li>• Form a legal taskforce to enact legislation for ensuring legal validity of e-enabled services and trust for Customers.</li> </ul>

Source: Adapted from Sethi and Sethi 2009; Bastaki and Geray 2005

## Appendix 4: Sample One of Transcribed Data

This is an excerpt from the transcription of an interview with one of the managers from Cisco. This excerpt begins with an overview of e-government in general and then progresses to introduce an overview of the stages of growth model.

*Transcription Sample begins:*

If you like... to explain to you the background of all this, when e-government started, there was a misconception, that e-government was providing information on the web, so governments started to use the web as an electronic brochure for posting information.

**I have noticed that, yeah...**

And that is very, I mean, the prehistoric form, the provision of information. Then they went to a second stage alright why don't we exchange information, meaning not only can you read a brochure that is static on the web, you could also as a citizen send information and receive information, this is interactive stage, people thought oh this is great and all that, because...but it was limited only to non confidential information, when the security improved, people started doing limited transactions on the web. Ok, and when you are doing these limited transactions sometimes using your credit card, and your national identification number, and actually doing transactions, what happened is that of course the service to the client improved, and more value was derived from all this, that was a major step, now the next step was to provide, and this what everyone is struggling with, is to provide integrated citizen-centric services, meaning if I wanted to open a company for instance, I can do it online without having to actually stand in a queue, now creating

acompany online, involves not only citizen and one section of the government, it involves many, very many, parties within the government, and what people realized these citizen centric services, integrated, are not easily achievable unless the government actually transforms itself. Here you start by saying you will use technology to provide customer centric services to clients, then you have a glass wall, it is invisible, you know you start to share information, exchanging information but then you cant go any further.

**Yeah you're just stuck...**

Your stuck, it's a glass wall, and you don't know its invisible, you don't know what it is and we found out that this glass wall is internal transformation within the government, meaning you can not just parachute technology and e-government and e-services on government officials without having themselves, having them to transform from within, meaning that the individual, cant come in the morning and give e-services and go home at 2 o'clock, it is a totally new mentality, you have to reconfigure...you have to do BPR, business process reengineering before you couldprovide citizen centric services. Then e-government has 2 facets, one that is internal and the other is external. If you like I can draw this for you on a piece of paper.

**Ok I will give you... (I tear out a paper from my notepad) more?**

No this is good this is perfect, so this is what really happens and there are charts that tell you that on the y-axis you have value, (he is drawing a graph) and this value is to both citizens and government, how do you define value, value is when you improve the quality of services and you also decrease your cost. Here is the timeline... right, so this is like this ok. Here is the interactive (dimension), the different stages, first you have the information stage, then you have the interactive, then you have the transactional here, but to reach the ultimate... the nirvana, the whole thing... e-services it is citizen centric. Meaning you are in your house and you can do all this, you can have courses online, visit your doctor, get all informationyou need before you go, etc... to do all these things you

need to do something, no matter how much money you throw at it, you can not do it unless you go through it, so this is transaction and there is something called transformation.

## **Appendix 5: Sample Two of Transcribed Data**

This is an excerpt from a transcription with one of the managers at the e-government section who provided a historical account of the e-government project and developments that went on.

*Transcription Sample begins:*

I just want to clear out that the e-government project for Dubai municipality started in 2001, the initiation of the project was by Sheikh Mohammed, he requested that the e-government project be implemented by all departments, and he put a target, and that's what makes Dubai's governmental departments unique compared to the rest of the world, since there was a target and a time frame to achieve the goal that has been in place, where 90% of governmental departments are to be provided electronically by the end of 2007.

Of course everyone and that includes us, as a governmental organization implemented this mandate and we started placing a holistic plan, and the e- government section was created and made up to service this project. We started by developing the infrastructure for the project, there were many things required the e- service is the final result, but before that there are many technical aspects that have to be available. Like servers, communication channels, linking to external sites, whether they were sites for municipality (external premises), or sites for external entities, communication lines, link between us and, now there is umm, network for all the governmental departments, from the ruler's court, we have to link to this network, and the speed is specified, all these things, the infrastructure we made sure it is available and as soon as possible. Of course with the length of the project there were adjustments and improvement (since technology

is constantly changing, in the beginning we started with the infrastructure, right after that we started with the project of e-government, the technology was more difficult in the beginning, transforming services to electronic form was not a simple task, we created a strategy to cooperate with private firms.

In the beginning we placed a strategy with them (the consultants), the municipality has a lot of services, now with DM we reached a final number, which is 518 services that is provided by DM in total, and these are services to the public, there are many services being offered, business and the public sorry are 518, these 518 need to be prioritized, to be studied, see which services we begin with, we placed the plan with the consulting company that the services we begin with are those that is used wide, services that are actually used, some services have 1000 transaction per day and some services have two transactions per year, so there is a big difference, we decided to choose the simple services, these might be more feasible to implement, in the first year. We transformed 20 services only, because these services were huge, but with the passing of time this number was multiplying, we are now in the fifth and final stage. The number multiplied with every year and different stages of the project, it started with 20, then 50 then 70 with each stage, in the fifth stage we went up to 137 service, by next week you might hear that we have completed all the stages of the e-government project, the services varied, we tried to provide various types, we did not want to focus on one particular set of services.

## **Appendix 6: Sample Three of Transcribed Data**

This is a third excerpt from a transcription with one of the managers at the e- government section who discussed the technical development of the online services.

*Transcription Sample begins:*

There are two types of roles in the Development Unit: the system analysts and developers, mainly two roles. Mainly their role and responsibility is design and analysis of the problems. Meaning the design of systems and the analysis if there is any problem and putting the solutions. Okay, the developers mostly their role is to do the coding, and then test the code, and then send it to UAT which is user acceptance testing.

**Where do they do it, you mean here?**

Internally in the Development Unit, they do technical testing. Make sure that the code that we have done is properly, okay, then we send it to the business users. Then they do the UTA, because their testing is different than our testing. Our testing is purely technical. They have to test the business, is this what they are asking for or not. Is this right or not from the business view.

**And what is that like, do they often find problems with it?**

It depends, from our side what is the loop that we do. For example, lets talks about the main things. Let's say it is a problem with the system. Or the business users need enhancement. So, the business users to study this problem from the point of view of the business, explain it properly to the system analysts. The system analysts will receive



these requirements...

### **How are the requirements collected, during meetings?**

First of all we have a system called support magic, they enter the details of the request in it. Then, they call for a meeting. If the issue is easy and very clear in description they may not require a meeting. If it was something that requires more clarification he will call for a meeting with the support team and they will go for a meeting to see if they have questions and to clarify everything. They clarify all the issues in the request itself. If it is a new requirement, if it is a problem they need to figure out what is the problem, what is causing the problem. After that they need to identify a solution. They will do a design, they place the solution, they will send it to the developer and the developer will work on it. Do the coding, the developer will then do the testing, he will see okay its working, in the technical way.

### **So do you follow some sort of checklist or something?**

It is according to the requirements. Then it will go to the custodians. To check is this what they requested or not. If this is okay, they will approve it and it will go to production, which is the live environment. It is one type of work that we do.

### **You are the ones that launch these services?**

Now, we have other roles in our unit. We coordinate with different units outside our section. For example, we coordinate with the Internet unit, who are in the operations. So we, for example, finalize the deployment request, we put all the information in it, it is tested and proven, then we send the request to the operations team, the operations team will execute it, for production. That means they will deploy it for production, after deployment, what is supposed to happen is that the custodians check if the change is there or not, if everything is okay then they will say it is fine, if there is something wrong, you know like the whole thing, they need to contact a developer, the developer will contact the Internet Unit and ask them to roll back the changes.